

ANNEX K  
To  
CRITIQUE OF ALL NASA MARS WEATHER DATA, WITH EMPHASIS ON PRESSURE:  
Original REMS Team and Ashima Research Weather Reports from Sol 15 to Sol 299

Unfortunately the public is likely to be so impressed by the MSL landing itself, and by the geology done to date, that it will remain unaware of exactly what shanegans have gone on with the meteorology on board unless we can succeed in landing a television documentary about it.

On the tables below, cells colored in lavender have obvious errors or lacking information. There was never any variation in the wind recorded from the 2 m/s from the East until May 10, 2013. Thus we assumed that damage to Wind Boom 1 was fatal to obtaining correct winds. This was finally confirmed by Ashima Research only after we had conducted an extensive Internet campaign against them and the REMS Team in an effort to expose the truth. All reports of Martian sunrise and sunset times by Ashima were also wrong (until May 11 as noted above). Our calculations of the correct daylight hours (within one to two tenths of a minute) are shown in yellow on Tables 2 and 3.

The lack of relative humidity may suggest that there was also damage to wind boom 2 where the humidity sensor was located. After Table 1 we dropped the column on relative humidity and replaced it with two columns that show erroneous daylight hours given by Ashima, and our corrections for them. With the exception of Sol 56 (October 2, 2012) Ashima published all sunrise times as 6 am and all sunset times as 5 pm. For their sole exception on Sol 56 they indicated sunrise at 5:31 am and sunset at 5:09 pm. See Annex J to this report for how to correctly calculate day length at MSL.

The primary source of Pressure, Temperature, Relative Humidity and Wind

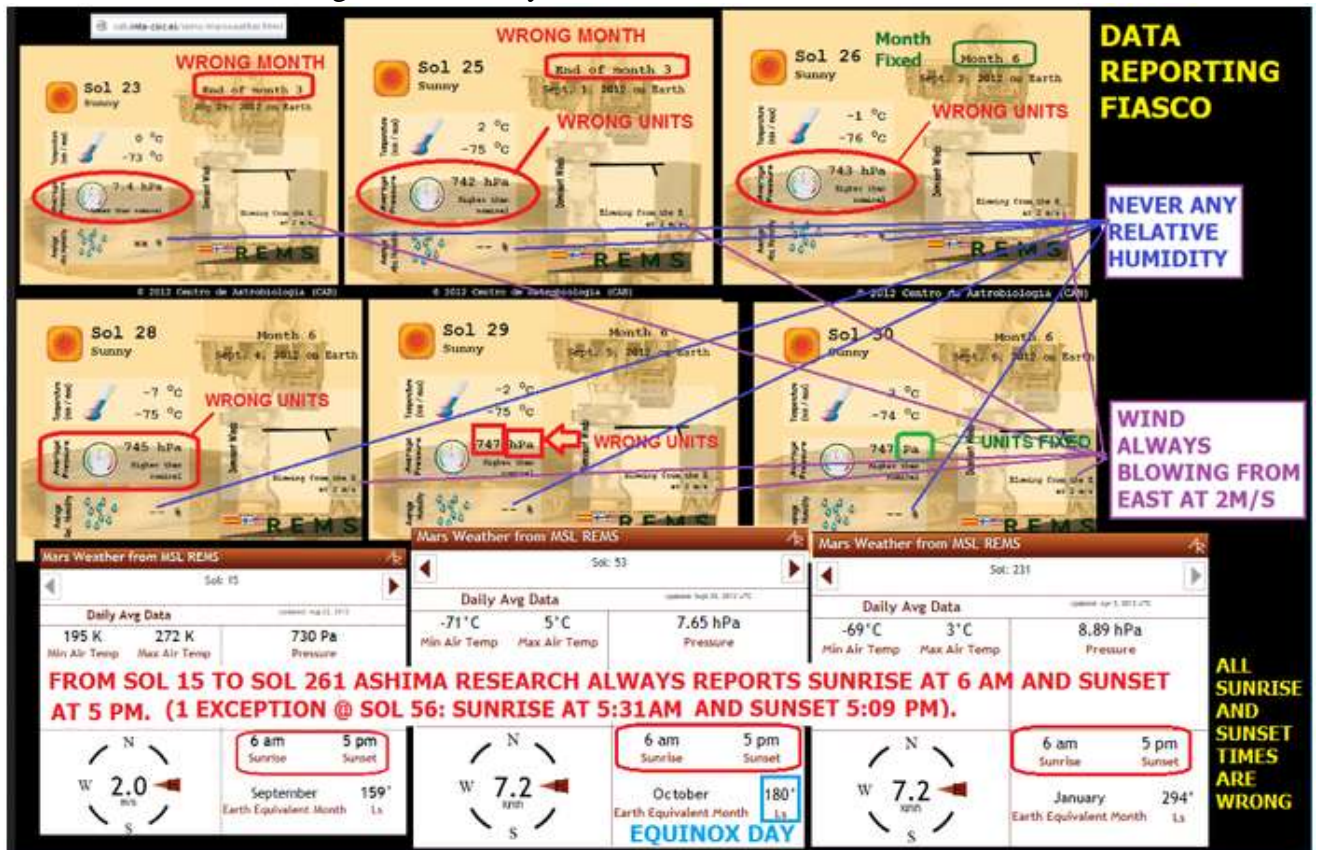
Data was from a site maintained by the **Centro de Astrobiologia** (and the REMS Team) which is primarily responsible to NASA/JPL for this data at <http://cab.inta-csic.es/rem/s/marsweather.html>. **Ashima**, who worked with the REMS Team, was the secondary source.

The tables below also reveal frequent confusion from the REMS Team and Ashima about what Sol a day was, and what the Ls was for that date.. The correct location of Mars in its orbit (Ls) is taken from an on-line **Mars calendar** at [http://www-mars.lmd.jussieu.fr/mars/time/martian\\_time.html](http://www-mars.lmd.jussieu.fr/mars/time/martian_time.html). A **Julian date calculator** is at [http://www.onlineconversion.com/julian\\_date.htm](http://www.onlineconversion.com/julian_date.htm). For November 25, 2012 Mars was at Ls 213.1, but Ashima incorrectly reported the Ls as 221. Often they forgot to enter the calendar with the date on Mars being reported, and instead (incorrectly chose the current date - resulting in the higher Ls position). On November 12 both REMS and, strangely enough, Ashima first, went from a report of November 9, 2012 as Sol 92 to a report of November 10, 2012 as Sol 89. The data for the new Sol 89 did not match anything from the old Sol 89, which was on November 5, 2012. Almost nonstop chaos appeared to reign at both sites. In part as a result of sloppy reporting of results by Ashima Research, we reviewed a paper by them on the Ashima/MIT Mars GCM to see if there was a wider pattern of mistakes being made by their firm with regard to Mars. Our review is [HERE](#).

A graph of pressures reported by the REMS Team is posted [HERE for Ls 158.8 on August 22, 2012 to Ls 199.8 on November 3, 2012](#). Note: A regional dust

storm was spotted growing southwest of the MSL on November 18, 2012 (see [the Jet Propulsion Laboratory Report and photo](#)). While there were [reports](#) on-line that for a regional dust storm (not yet at MSL), "A drop in air pressure and small rise in the overnight low temperature have been recorded by its Spanish-built Rover Environmental Monitoring Station," as you

can see below for the period between November 18 and November 25, where pressures are not missing, the pressures continued to rise from 833.41 Pa to 847 Pa (845 Pa on their revised report issued on Jul3 3, 2013). Only the temperature statement just given correlates with their data. The dust storm did not go global.



| TABLE 1 – Original REMS Team and Ashima Research MSL Winter Weather Reports |      |            |            |                                  |                           |         |       |           |                         |                        |   |
|---|------|------------|------------|----------------------------------|---------------------------|---------|-------|-----------|-------------------------|------------------------|---|
| DATE (IN WINTER AT MSL)   | SOL  | MAX TEMP C | MIN TEMP C | Roffman Corrected Pressure in Pa | Reported Press. Pa or hPa | WIND    | LS    | % REL HUM | Ashima reported sunrise | Ashima reported sunset | ERRORS AT REMS & ASHIMA/COMMENTS                                    |
| 8/22/2012   | 15   | -1         | -78        | 730                              | 7.3 hPa                   | E 2 m/s | 158.8 | 7         |                         |                        | Relative Humidity likely from a template                            |
| 8/23/2012   | 16   | 0          | -76        | 740                              | 7.4 hPa                   | E 2 m/s | 159.3 |           | 6:00 AM                 | 5:00 PM                |   |
| 8/24/2012   | 17   |            |            |                                  |                           |         | 159.9 |           |                         |                        | Date conflict during missing data 8/23 to 8/24 (Sols 16, 17 and 18) |
|   | 18   |            |            |                                  |                           |         |       |           |                         |                        |   |
| 8/25/2012   | 19   | -18        | -78        | 785                              | 7.85 hPa                  | E       | 160.4 | NONE      | 6:00 AM                 | 5:00 PM                | Minimum temp. inconsistent with all others.                         |
| 8/26/2012   | 20   | NONE       | NONE       | NONE                             | NONE                      |         | 160.9 | NONE      |                         |                        | No Report issued  |
| 8/27/2012   | 21   | 0          | -73        | 790                              | 7.9 hPa                   | E 2 m/s | 161.4 | NONE      | 6:00 AM                 | 5:00 PM                |   |
| 8/28/2012   | 22   | 3          | -70        | 740                              | 7.4 hPa                   | E 2 m/s | 162   | NONE      | 6:00 AM                 | 5:00 PM                |   |
| 8/29/2012   | 23   | 0          | -73        | 740                              | 7.4 hPa                   | E 2 m/s | 162.5 | NONE      | 6:00 AM                 | 5:00 PM                | MONTH 3   |
| 8/30/2012   | 24   | 0          | -75        | 740                              | 7.4 hPa                   | E 2 m/s | 163   | NONE      | 6:00 AM                 | 5:00 PM                | MONTH 3   |
| 8/31/2012   |      |            |            |                                  |                           |         |       |           |                         |                        | ADJUSTMENT FOR  |
| <b>NO REPORT</b>  | NONE | NONE       | NONE       | NONE                             | NONE                      | NONE    | 163.6 | NONE      | 6:00 AM                 | 5:00 PM                | MARS DAYLENGTH?   |

| DATE (IN WINTER AT MSL) | SOL | MAX TEMP C | MIN TEMP C | Roffman Corrected Pressure in Pa | Reported Press. Pa or hPa | WIND | <a href="#">Ls</a> | % REL HUM | Ashima reported sunrise | Ashima reported sunset | ERRORS AT REMS & ASHIMA/COMMENTS |
|-------------------------|-----|------------|------------|----------------------------------|---------------------------|------|--------------------|-----------|-------------------------|------------------------|----------------------------------|
|-------------------------|-----|------------|------------|----------------------------------|---------------------------|------|--------------------|-----------|-------------------------|------------------------|----------------------------------|

|                  |      |      |      |      |          |         |       |      |         |         |  |
|------------------|------|------|------|------|----------|---------|-------|------|---------|---------|--|
| 9/1/2012         | 25   | 2    | -75  | 742  | 742 hPa  | E 2 m/s | 164.1 | NONE | 6:00 AM | 5:00 PM | MONTH 3;   |
| 9/2/2012         | 26   | -1   | -76  | 743  | 743 hPa  | E 2 m/s | 164.7 | NONE | 6:00 AM | 5:00 PM | Units reported hPa rather than PA100X too high Sol 25 to 29. |
| 9/3/2012         | 27   | -6   | -75  | 745  | 745 hPa  | E 2 m/s | 165.2 | NONE | 6:00 AM | 5:00 PM | Units reported hPa rather than PA100X too high Sol 25 to 29. |
| 9/4/2012         | 28   | -7   | -75  | 745  | 745 hPa  | E 2 m/s | 165.7 | NONE | 6:00 AM | 5:00 PM | Units reported hPa rather than PA100X too high Sol 25 to 29. |
| 9/5/2012         | 29   | -2   | -75  | 747  | 747 hPa  | E 2 m/s | 166.3 | NONE | 6:00 AM | 5:00 PM | Units reported hPa rather than PA100X too high Sol 25 to 29. |
| 9/6/2012         | 30   | -3   | -74  | 747  | 747 Pa   | E 2 m/s | 166.8 | NONE | 6:00 AM | 5:00 PM | Units fixed hPa  |
| 9/7/2102         | 31   | NONE | -72  | 742  | 742 Pa   | E 2 m/s | 167.4 | NONE | 6:00 AM | 5:00 PM | back to Pa   |
| 9/8/2012         | 32   | -2   | -73  | 748  | 748 Pa   | E 2 m/s | 167.9 | NONE | 6:00 AM | 5:00 PM |  |
| 9/9/2012         |      |      |      |      |          |         |       |      |         |         |  |
| <b>NO REPORT</b> | NONE | NONE | NONE | NONE | NONE     | NONE    | 168.4 | NONE | 6:00 AM | 5:00 PM |  |
| 9/10/2012        | 34   | 0    | -75  | 748  | 7.48 hPa | E 2 m/s | 169   | NONE | 6:00 AM | 5:00 PM |  |

| DATE (IN WINTER AT MSL) | SOL | MAX TEMP C | MIN TEMP C | Roffman Corrected Pressure in Pa | Reported Press. Pa or hPa | WIND    | <a href="#">Ls</a> | % REL HUM | Ashima reported sunrise | Ashima reported sunset | ERRORS AT REMS & ASHIMA/COMMENTS                        |
|-------------------------|-----|------------|------------|----------------------------------|---------------------------|---------|--------------------|-----------|-------------------------|------------------------|---|
|                         |     |            |            |                                  |                           |         |                    |           |                         |                        |   |
| 9/11/2012               | 35  | -2         | -73        | 799                              | 799 Pa                    | E 2 m/s | 169.5              | NONE      | 6:00 AM                 | 5:00 PM                |   |
| 9/12/2012               | 36  | 5          | -73        | 744                              | 744 Pa                    | E 2 m/s | 170.1              | NONE      | 6:00 AM                 | 5:00 PM                | <b>BACK TO MONTH 3</b>                                  |
| 9/13/2012               | 37  | 0          | -73        | 752                              | 7.52 hPa                  | E 2 m/s | 170.6              | NONE      | 6:00 AM                 | 5:00 PM                | <b>BACK TO MONTH 6</b>                                  |
| 9/14/2012               | 38  | -3         | -73        | 748                              | 748Pa                     | E 2 m/s | 171.2              | NONE      | 6:00 AM                 | 5:00 PM                |   |
| 9/15/2012               | 39  | -3         | -75        | 757                              | 757Pa                     | E 2 m/s | 171.7              | NONE      | 6:00 AM                 | 5:00 PM                |   |
| 9/16/2012               | 40  | 2          | -75        | 804                              | 8.04 hPa                  | E 2 m/s | 172.3              | NONE      | 6:00 AM                 | 5:00 PM                |   |
| 9/17/2012               | 41  | 2          | -75        | 752                              | 7.52 hPa                  | E 2 m/s | 172.8              | NONE      | 6:00 AM                 | 5:00 PM                |   |
| 9/18/2012               | 42  | 5          | -75        | 755                              | 755 Pa                    | E 2 m/s | 173.4              | NONE      | 6:00 AM                 | 5:00 PM                |   |
| 9/19/2012               | 43  | 3          | -73        | 756                              | 756 Pa                    | E 2 m/s | 173.9              | NONE      | 6:00 AM                 | 5:00 PM                | <a href="#">Ashima used Ls 175</a>                      |
| 9/20/2012               | 44  | 3.9        | -75        | 754                              | 754 Pa                    | E 2 m/s | 174.5              | NONE      | 6:00 AM                 | 5:00 PM                | <a href="#">Ashima used Ls 175 and</a><br>max Temp 4 C. |
| 9/21/2012               | 45  | 2.9        | -74        | 757                              | 757 Pa                    | E 2 m/s | 175                | NONE      | 6:00 AM                 | 5:00 PM                |   |

| DATE (IN WINTER AT MSL) | SOL | MAX TEMP C | MIN TEMP C | Roffman Corrected Pressure in Pa | Reported Press. Pa or hPa | WIND    | Ls    | % REL HUM | Ashima reported sunrise | Ashima reported sunset | ERRORS AT REMS & ASHIMA/COMMENTS                     |
|-------------------------|-----|------------|------------|----------------------------------|---------------------------|---------|-------|-----------|-------------------------|------------------------|--|
| 9/22/2012               | 46  | 4          | -74        | 759                              | 759 Pa                    | E 2 m/s | 175.6 | NONE      | 6:00 AM                 | 5:00 PM                |  |
| 9/23/2012               | 47  | 6          | -75        | 758                              | 758 Pa                    | E 2 m/s | 176.1 | NONE      | 6:00 AM                 | 5:00 PM                | <a href="#">Ashima used Ls 177</a>                   |
| 9/24/2012               | 48  | 4          | -75        | 758                              | 7.58 hPa                  | E 2 m/s | 176.7 | NONE      | 6:00 AM                 | 5:00 PM                |  |
| 9/25/2012               | 49  | 4.4        | -74        | 763                              | 763 Pa                    | E 2 m/s | 177.3 | NONE      | 6:00 AM                 | 5:00 PM                | <a href="#">Ashima used Ls 178 and max Temp 4 C.</a> |
| 9/26/2012               | 50  | 0          | -72        | 760                              | 760 Pa                    | E 2 m/s | 177.8 | NONE      | 6:00 AM                 | 5:00 PM                |  |
| 9/27/2012               | 51  | 2.5        | -76        | 766                              | 766 Pa                    | E 2 m/s | 178.4 | NONE      | 6:00 AM                 | 5:00 PM                | <a href="#">Ashima used max Temp 3 C.</a>            |
| 9/28/2012               | 52  | 7          | -74        | 765                              | 765 Pa                    | E 2 m/s | 178.9 | NONE      | 6:00 AM                 | 5:00 PM                |  |
| 9/29/2012               | 53  | 5          | -71        | 765                              | 7.65 hPa                  | E 2 m/s | 179.6 | NONE      | 6:00 AM                 | 5:00 PM                | <b>END WINTER AT MSL</b>                             |
| 9/30/2012               | 54  | 5          | -73        | 764                              | 764 Pa                    | E 2 m/s | 180.1 | NONE      | 6:00 AM                 | 5:00 PM                | <b>Month 7: MSL SPRING</b>                           |

## REMS Team and Ashima Research MSL Spring Weather Reports

| TABLE 2 - 2012 REMS Team and Ashima Research MSL Spring Weather Reports |     |               |               |                   |            |       |   |  |                               |                              |  |
|---|-----|---------------|---------------|-------------------|------------|-------|---|--|-------------------------------|------------------------------|--|
| 2012 DATE<br>(IN<br>SPRING<br>AT MSL)                                   | SOL | MAX<br>TEMP C | MIN<br>TEMP C | Pressure<br>in Pa | Wind       | Ls    | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS  |
| 10/1/2012   | 55  | -1            | -74           | 768               | E 2<br>m/s | 180.8 | 12 hr 1.4 min                               | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |  |
| 10/2/2012   | 56  | -3.8          | -73.5         | 770               | E 2<br>m/s | 181.3 | 12 hr 1.7 min                               | 12 hr 22 min                           | 5:31 AM                       | 5:09 PM                      | ASHIMA<br>ATTEMPTS<br>TO FIX<br>SUNRISE<br>AND SUNSET<br>TIMES.  |
| 10/3/2012   | 57  | -3.8          | -73           | 779               | E 2<br>m/s | 181.8 | 12 hr 1.7 min                               | 11 hr                                  | 6:00 AM                       | 5:00 PM                      | <a href="#">Ashima is<br/>again back to<br/>its previous<br/>wrong sunrise<br/>and sunset<br/>times.</a> |
| 10/4/2012   | 58  | -3            | -74           | 779               | E 2<br>m/s | 182.3 | 12 hr 2 min                                 | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |  |
| 10/5/2012   | 59  | -1            | -76           | 781               | E 2<br>m/s | 182.9 | 12 hr 2.2 min                               | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |  |

| 2012 DATE<br>(IN SPRING<br>AT MSL) | SOL | MAX<br>TEMP C | MIN<br>TEMP C | Pressure<br>in Pa        | Wind       | Ls    | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS                           |
|------------------------------------|-----|---------------|---------------|--------------------------|------------|-------|---|--|-------------------------------|------------------------------|---|
| 10/6/2012                          | 60  | -2            | -75           | 785                      | E 2<br>m/s | 183.5 | 12 hr 2.2 min                               |  |                               | 5:00 PM                      | Ashima did not<br>post any<br>weather<br>sunrise or<br>sunset times     |
| 10/7/2012                          | 61  | -1            | -72           | 779                      | E 2<br>m/s | 184   | 12 hr 2.5 min                               | 11 hr                                  | 6:00 AM                       | 5:00 PM                      | Ashima again<br>returns to<br>wrong sunrise<br>and sunset<br>times.     |
| 10/8/2012                          | 62  | -1            | -72           | 782                      | E 2<br>m/s | 184.6 | 12 hr 2.5 min                               | 11 hr                                  | 6:00 AM                       | 5:00 PM                      | Ashima lists Ls<br>as 184.  |
| 10/9/2012                          | 63  | -1            | -74           | 786                      | E 2<br>m/s | 185.2 | 12 hr 2.8 min                               | 11 hr                                  | 6:00 AM                       | 5:00 PM                      | Ashima lists Ls<br>as 186   |
| 10/10/2012                         | 64  | -1            | -74           | 785                      | E 2<br>m/s | 185.8 | 12 hr 2.8 min                               | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| 10/11/2012                         | 65  | -2            | -72           | 785                      | E 2<br>m/s | 186.3 | 12 hr 3 min                                 | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |   |
| 10/11/2012                         | 66  | -2            | -73           | 785                      | E 2<br>m/s | 186.3 | 12 hr 3 min                                 | 11 hr                                  | 6:00 AM                       | 5:00 PM                      | Day length<br>adjustment?<br>Earth still Oct<br>25 but sol up<br>to 66. |
| 10/12/2012                         | 67  | -5            | -73           | 781                      | E 2<br>m/s | 186.9 | 12 hr 3.3 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |   |
| 10/13/2012                         | 68  | -1            | -68           | <b>Not<br/>available</b> | E 2<br>m/s | 187.5 | 12 hr 3.4 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |   |
| 10/14/2012                         | 69  |               |               |                          |            | 188.1 | 12 hr 3.6 min                               |  |                               |                              | <b>Not reported</b>   |



| 2012 DATE<br>(IN SPRING<br>AT MSL) | SOL              | MAX<br>TEMP C    | MIN<br>TEMP C    | Pressure<br>in Pa | Wind       | Ls    | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS       |
|------------------------------------|------------------|------------------|------------------|-------------------|------------|-------|---|--|-------------------------------|------------------------------|---|
| 10/15/2012<br><br>NO<br>REPORT     | 70               |                  |                  |                   |            | 188.6 | 12 hr 3.6 min                               |  |                               |                              | Not reported  |
| 10/16/2012                         | 70               | 1                | -72              | 783               | E 2<br>m/s | 189.2 | 12 hr 3.9 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | Was Sol 70 on<br>Oct. 15 ot 16?                     |
| 10/17/2012                         | 71               | -2               | -71              | 785               | E 2<br>m/s | 189.8 | 12 hr 4.1 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | Ashima<br>wrongly lists<br>Ls as 191                |
| 10/18/2012                         | 72               | -2               | -74              | 786               | E 2<br>m/s | 190.4 | 12 hr 4.2 min                               | 11 hr                                  | 6:00 AM                       | 5:00 PM                      | Ashima lists Ls<br>as 192                           |
| 10/19/2012                         | 73               | 0                | -70              | 788               | E 2<br>m/s | 191   | 12 hr 4.5 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | Ashima<br>correctly lists<br>Ls as 191.             |
| 10/20/2012                         | 74               | -5               | -72              | 790               | E 2<br>m/s | 191.5 | 12 hr 4.7 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |   |
| 10/21/2012<br><br>NO<br>REPORT     | Not<br>available | Not<br>available | Not<br>available | Not<br>available  |            | 192.1 | 12 hr 4.8 min                               |  |                               |                              | Not available                                       |
| 10/22/2012                         | 75               | -1               | -73              | 791               | E 2<br>m/s | 192.7 | 12 hr 4.8 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | Ashima lists Ls<br>as 193                           |
| 10/23/2012                         | 76               | -1               | -72              | 791               | E 2<br>m/s | 193.3 | 12 hr 5 min                                 | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | Ashima lists Ls<br>as 194                           |
| 10/24/2012                         | 77               | -1               | -72              | 793               | E 2<br>m/s | 193.9 | 12 hr 5.3 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |   |
| 10/25/2012                         | 78               | 0                | -71              | 794-73            | E 2<br>m/s | 194.5 | 12 hr 5.4 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |   |
| 10/26/2012                         | 79               | -2               | -73              | 795.5             | E 2<br>m/s | 195   | 12 hr 5.6 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | Ashima lists<br>Pressure as<br>7.96 hPa (796<br>Pa) |
| 10/27/2012                         | 80               | -1               | -73              | 797               | E 2<br>m/s | 195.6 | 12 hr 5.7 min                               | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |

| 2012 DATE<br>(IN SPRING<br>AT MSL) | SOL | MAX<br>TEMP C   | MIN<br>TEMP C   | Pressure<br>in Pa    | Wind                | Ls    | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS  |
|------------------------------------|-----|-----------------|-----------------|----------------------|---------------------|-------|---|--|-------------------------------|------------------------------|--|
| 10/28/2012                         | 81  | -1.5            | -72             | 799                  | E 2<br>m/s          | 196.2 | 12 hr 5.9 min                               | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |  |
| 10/29/2012                         | 82  | -0.4            | -72             | 798                  | E 2<br>m/s          | 196.8 | 12 hr 6.1 min                               | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |  |
| 10/30/2012                         | 83  | -0.5            | -72.5           | 800.51               | E 2<br>m/s          | 197.4 | 12 hr 6.3 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | Ashima lists<br>Pressure as<br>8.01 hPa, Ls<br>198. This is<br>the 1st REM<br>pressure given<br>in Pa to 2<br>decimal<br>places. |
| 10/31/2012                         | 84  | -0.5            | -70             | 800                  | E 2<br>m/s          | 198   | 12 hr 6.4 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | Ashima lists<br>Pressure as<br>199.  |
| 11/1/2012                          | 85  | -0.9            | -71.4           | 805                  | E 2<br>m/s          | 198.6 | 12 hr 6.6 min                               | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |  |
| 11/2/2012                          | 86  | -4              | -71             | 808                  | E 2<br>m/s          | 199.2 | 12 hr 6.7 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |  |
| 11/3/2012                          | 87  | -4              | -70             | 808.7                | E 2<br>m/s          | 199.8 | 12 hr 6.9 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |  |
| 11/4/2012                          |     |                 |                 |                      |                     |       | 12 hr 7.1 min                               |  |                               |                              |  |
| <b>NO<br/>REPORT</b>               | 88  | <b>No rept.</b> | <b>No rept.</b> | <b>NO<br/>REPORT</b> | <b>No<br/>rept.</b> | 200.4 |   |  |                               |                              | <b>NO REPORT<br/>for sol 88</b>  |
| 11/5/2012                          | 89  | -1              | -73             | 813.25               | E 2<br>m/s          | 201   | 12 hr 7.3 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | Ashima lists<br>Ls as 202  |
| 11/6/2012                          | 90  | -0.4            | -71.2           | 814                  | E 2<br>m/s          | 201.6 | 12 hr 7.5 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |  |

| 2012 DATE<br>(IN SPRING<br>AT MSL) | SOL       | MAX<br>TEMP C   | MIN<br>TEMP C   | Pressure<br>in Pa | Wind            | Ls         | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS  |
|------------------------------------|-----------|-----------------|-----------------|-------------------|-----------------|------------|---|--|-------------------------------|------------------------------|--|
| 11/7/2012                          | 91        | -0.8            | -73.8           | 818               | E 2<br>m/s      | 202.2      | 12 hr 7.5 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |  |
| 11/8/2012                          | 92        | 0               | -74             | 820.29            | E 2<br>m/s      | 202.8      | 12 hr 7.7 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |  |
| 11/9/2012<br><b>NO<br/>REPORT</b>  | 93        | <b>No rept.</b> | <b>No rept.</b> | <b>No rept.</b>   | <b>No rept.</b> | 203.4      | 12 hr 7.8 min                               |  |                               |                              | <b>NO REPORT<br/>for sol 93</b>  |
| 11/10/2012<br><b>NO<br/>REPORT</b> | 94        |                 |                 |                   |                 |            | 12 hr 7.9 min                               | 11 hr                                  |                               | 5:00 PM                      | REMS AND<br>ASHIMA<br>RELABEL<br>NOVEMBER<br>10 AS SOL 89!   |
| 11/10/2012                         | <b>89</b> | 0               | -71             | 822.43            | E 2<br>m/s      | <b>204</b> | 12 hr 8 min                                 | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | <b>ASHIMA<br/>CLAIMS THE<br/>NEW SOL 89<br/>IS Ls 205</b>  |
| 11/11/2012<br><b>NO<br/>REPORT</b> | <b>89</b> | 0               | -71             | 815.53            | E 2<br>m/s      | 204.6      | 12 hr 8.2 min                               | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |  |
| 11/12/2012                         | 96        | 2               | -70             | 827               | E 2<br>m/s      | 205.2      | 12 hr 8.3 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | After Nov 10<br>and 11 were<br>mislabeled as<br>Sol 89, REMS<br>now reports<br>that Nov 12 is<br>Sol 96. |
| 11/13/2012                         | 97        | -3              | -68             | 828               | E 2<br>m/s      | 205.8      | 12 hr 8.6 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |  |
| 11/14/2012                         | 98        | -1              | -68             | 829               | E 2<br>m/s      | 206.5      | 12 hr 8.7 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |  |

| 2012 DATE<br>(IN SPRING<br>AT MSL) | SOL | MAX<br>TEMP C   | MIN<br>TEMP C   | Pressure<br>in Pa  | Wind            | Ls    | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS                                     |
|------------------------------------|-----|-----------------|-----------------|--|-----------------|-------|---|--|-------------------------------|------------------------------|---|
| 11/15/2012                         | 99  | -1              | -68             | 829.59   | E 2<br>m/s      | 207   | 12 hr 8.8 min                               | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | Pressure<br>recorded as<br>829.5 9 Pa.<br>Ashima lists<br>pressure as<br>8.30 hPa |
| 11/16/2012                         |     |                 |                 |  |                 |       | 12 hr 9 min                                 |  |                               |                              |   |
| <b>NO<br/>REPORT</b>               | 100 | <b>No rept.</b> | <b>No rept.</b> | <b>No rept.</b>  | <b>No rept.</b> | 207.6 |   |  |                               |                              | <b>No report.</b>   |
| 11/17/2012                         |     |                 |                 |  |                 |       | 12 hr 9.2 min                               |  |                               |                              |   |
| <b>NO<br/>REPORT</b>               | 101 | <b>No rept.</b> | <b>No rept.</b> | <b>No rept.</b>  | <b>No rept.</b> | 208.2 |   |  |                               |                              | <b>No report.</b>   |
|                                    |     |                 |                 | 833.41   |                 |       | 12 hr 9.4 min                               | 11 hr                                  |                               |                              |   |
| 11/18/2012                         | 102 | 8               | -67             | <u>Dust<br/>storm<br/>growing<br/>southwest<br/>of MSL</u> | E 2<br>m/s      | 208.8 |   |  | 6:00 AM                       | 5:00 PM                      |   |
| 11/19/2012                         |     |                 |                 |  |                 |       | 12 hr 9.4 min                               |  |                               |                              |   |
| <b>NO<br/>REPORT</b>               | 103 | <b>No rept.</b> | <b>No rept.</b> | <b>No rept.</b>  | <b>No rept.</b> | 209.4 |   |  | <b>No<br/>rept.</b>           |                              |   |

| 2012 DATE<br>(IN SPRING<br>AT MSL) | SOL | MAX<br>TEMP C                               | MIN<br>TEMP C | Pressure<br>in Pa | Wind       | Ls    | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS   |
|------------------------------------|-----|---|---------------|-------------------|------------|-------|---|--|-------------------------------|------------------------------|---|
| 11/20/2012                         | 104 | 5<br>(4.7<br>published<br>later by<br>REMS) | -67           | 839               | E 2<br>m/s | 210   | 12 hr 9.7 min                               | 11 hr                                  | 6:00 AM                       | 5:00 PM                      | The first<br>report posted<br>was from<br>Ashima, but it<br>cited REMS.<br>This is the<br>first time that<br>Ashima<br>posted a<br>report<br>BEFORE<br>REMS,<br>indicating<br>that they<br>don't rely on<br>REMS reports<br>for their data.<br>What Ashima<br>posted is in<br>blue. What is<br>in black was<br>posted later<br>by REMS. |
| 11/21/2012                         |     |   |               |                   |            | 210.6 | 12 hr 9.8 min                               | 11 hr                                  |                               |                              |   |
| 11/22/2012                         |     |   |               |                   |            | 211.2 | 12 hr 9.9 min                               | 11 hr                                  |                               |                              |   |
| 11/23/2012                         |     |   |               |                   |            | 211.8 | 12 hr 10.1 min                              | 11 hr                                  |                               |                              |   |
| 11/24/2012                         |     |   |               |                   |            | 212.4 | 12 hr 10.2 min                              | 11 hr                                  |                               |                              |   |

| 2012 DATE<br>(IN SPRING<br>AT MSL) | SOL              | MAX<br>TEMP C | MIN<br>TEMP C | Pressure<br>in Pa | Wind       | Ls    | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS  |
|------------------------------------|------------------|---------------|---------------|-------------------|------------|-------|---|--|-------------------------------|------------------------------|--|
| 11/25/2012                         | <b>108</b>       | 5             | -65           | 847               | E 2<br>m/s | 213.1 | 12 hr 10.5 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | Both Ashima and REMS report Sol 108 as November 25, November 25 should be Sol 109. Ashima reports this Sol at Ls 221. In reality November 24 is Sol 108 at Ls 212.4 and November 25 is Sol 109 at Ls 213.1. There is no pressure or other data reported out for the previous 4 days when a regional dust storm was southwest of MSL. |
| 11/26/2012                         | <b>No report</b> |               |               |                   |            | 213.7 | 12 hr 10.6 min                              | 11 hr                                  |                               |                              |  |
| 11/27/2012                         | <b>No report</b> |               |               |                   |            | 214.3 | 12 hr 10.7 min                              | 11 hr                                  |                               |                              |  |

| 2012 DATE<br>(IN SPRING<br>AT MSL) | SOL        | MAX<br>TEMP C | MIN<br>TEMP C | Pressure<br>in Pa | Wind       | Ls         | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS   |
|------------------------------------|------------|---------------|---------------|-------------------|------------|------------|---|--|-------------------------------|------------------------------|---|
| 11/28/2012<br><b>No report</b>     | <b>111</b> |               |               |                   |            | 214.9      | 12 hr 10.9 min                              | 11 hr                                  |                               |                              |   |
| 11/29/2012                         | <b>111</b> | 5             | -66           | 850               | E 2<br>m/s | 215.5      | 12 hr 11.1 min                              | 11 hr                                  | <b>6:00<br/>AM</b>            | 5:00 PM                      | Ashima<br>reports this<br>Sol at Ls 216<br>after having<br>Sol Ls 108 as<br>Ls 221.   |
| 11/30/2012                         | 112        | 3             | -66           | 852               | E 2<br>m/s | 216.1      | 12 hr 11.2 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |   |
| 12/1/2012                          | 113        | 3             | -66.11        | 857               | E 2<br>m/s | 216.7      | 12 hr 11.3 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| <b>12/2/2012</b>                   | 114        | 3             | -69           | 858               | E 2<br>m/s | 217.4      | 12 hr 11.3 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| <b>12/2/2012</b>                   | 115        | 1.3           | -67           | 857.26            | E 2<br>m/s | <b>218</b> | 12 hr 11.5 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      | Both Ashima<br>and REMS<br>report Sol 114<br>and 115 as<br>December 2.<br>For Dec 2 the<br>Ls is 217.4,<br>for Dec. 3 the<br>Ls is 218 as<br>shown on<br>this line. |

| 2012 DATE<br>(IN SPRING<br>AT MSL) | SOL        | MAX<br>TEMP C | MIN<br>TEMP C | Pressure<br>in Pa | Wind       | Ls         | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS |
|------------------------------------|------------|---------------|---------------|-------------------|------------|------------|---|--|-------------------------------|------------------------------|---|
| 12/3/2012                          | 116        | 5             | -67           | 857               | E 2<br>m/s | <b>218</b> | 12 hr 11.7 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| 12/4/2012                          | 117        | 3.45          | -66.37        | 862               | E 2<br>m/s | 218.6      | 12 hr 11.8 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |   |
| 12/5/2012                          | 118        | 4.53          | -65.19        | 864               | E 2<br>m/s | 219.2      | 12 hr 12 min                                | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |   |
| 12/6/2012                          | 119        | 3.12          | -66.22        | 866.3             | E 2<br>m/s | 219.8      | 12 hr 12.2 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      | <b>Ashima lists<br/>Ls as 221.</b>            |
| 12/7/2012                          | 120        | 5.91          | -66.67        | 867.5             | E 2<br>m/s | 220.5      | 12 hr 12.3 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |   |
| 12/8/2012                          | 121        | 1.31          | -64.1         | 865.4             | E 2<br>m/s | 221.1      | 12 hr 12.5 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      | <b>Ashima lists<br/>Ls as 222</b>             |
| 12/9/2012                          |            |               |               |                   | E 2<br>m/s | 221.7      | 12 hr 12.6 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |   |
| <b>No report</b>                   | <b>122</b> |               |               |                   | E 2<br>m/s |            | 12 hr 12.7 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |   |
| 12/10/2012                         | 123        | 2.1           | -65.7         | 875.96            | E 2<br>m/s | 222.3      | 12 hr 12.7 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |   |
| 12/11/2012                         | 124        | 5.4           | -65.5         | 876.84            | E 2<br>m/s | 222.9      | 12 hr 12.9 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |   |
| 12/12/2012                         | 125        | 3.4           | -63.8         | 875.25            | E 2<br>m/s | 223.6      | 12 hr 13 min                                | 11 hr                                  | 6:00 AM                       | 5:00 PM                      | <b>Ashima lists<br/>Ls as 225</b>             |
| 12/13/2012                         | 126        | -5            | -67           | 880               | E 2<br>m/s | 224.2      | 12 hr 13.2 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | <b>Ashima lists<br/>Ls as 224</b>             |
| 12/14/2012                         | 127        | 2             | -67           | 884               | E 2<br>m/s | 224.8      | 12 hr 13.3 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      | <b>Ashima lists<br/>Ls as 225</b>             |
| 12/15/2012                         | 128        | -4            | -67           | 884               | E 2<br>m/s | 225.4      | 12 hr 13.5 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | <b>Ashima lists<br/>Ls as 225</b>             |



| 2012 DATE<br>(IN SPRING<br>AT MSL) | SOL        | MAX<br>TEMP C | MIN<br>TEMP C | Pressure<br>in Pa | Wind       | Ls    | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS   |
|------------------------------------|------------|---------------|---------------|-------------------|------------|-------|---|--|-------------------------------|------------------------------|---|
| 12/16/2012                         | 129        | -4            | -66           | 894               | E 2<br>m/s | 226.1 | 12 hr 13.6 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | This was listed as the last unzipped Ashima report. It still erroneously shows sunrise at 6 AM and sunset at 5 PM. Later the unzip requirement was dropped. |
| 12/17/2012                         | 130        | -6            | -66           | 889               | E 2<br>m/s | 226.7 | 12 hr 13.7 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| 12/18/2012                         | 131        | -7            | -66           | 888               | E 2<br>m/s | 227.3 | 12 hr 13.9 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| 12/19/2012                         | 132        | -6.8          | -65.4         | 892.84            | E 2<br>m/s | 227.9 | 12 hr 14 min                                | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| 12/20/2012                         | 133        | 0.6           | -65.4         | 891.21            | E 2<br>m/s | 228.6 | 12 hr 14.2 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| 12/21/2012                         | 134        | -0.62         | -66.79        | 893.99            | E 2<br>m/s | 229.2 | 12 hr 14.3 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| 12/22/2012                         | 135        | -4.66         | -64.88        | 894.34            | E 2<br>m/s | 229.8 | 12 hr 14.5 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| 12/23/2012                         |            |               |               |                   |            |       | 12 hr 14.6 min                              |  |                               |                              |   |
| <b>No report</b>                   | <b>136</b> |               |               |                   |            | 230.4 |   |  |                               |                              |   |
| 12/24/2012                         |            |               |               |                   |            |       | 12 hr 14.8 min                              |  |                               |                              |   |
| <b>No report</b>                   | <b>137</b> |               |               |                   |            | 231.1 |   |  |                               |                              |   |
| 12/25/2012                         |            |               |               |                   |            |       | 12 hr 14.9 min                              |  |                               |                              |   |
| <b>No report</b>                   | <b>138</b> |               |               |                   |            | 231.7 |   |  |                               |                              |   |

| 2012 DATE<br>(IN SPRING<br>AT MSL)  | SOL                   | MAX<br>TEMP C | MIN<br>TEMP C | Pressure<br>in Pa | Wind       | Ls    | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS   |
|---|-----------------------|---------------|---------------|-------------------|------------|-------|---|--|-------------------------------|------------------------------|---|
| 12/26/2012<br><br><b>No report</b>  | <b>139</b>            |               |               |                   |            | 232.3 | 12 hr 15 min                                |  |                               |                              |   |
| 12/27/2012<br>to<br>12/30/2012<br><br><b>No report<br/>on<br/>Vacation?</b> | <b>140 to<br/>143</b> |               |               |                   |            | 233   | 12 hr 15.2 min                              |  |                               |                              |   |
| <b>12/31/2012</b>   | <b>144</b>            | -3            | -64           | 907               | E 2<br>m/s | 235.5 | 12 hr 15.6 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| <b>12/1/2012<br/>DATE<br/>ERROR</b>   | <b>144</b>            | -1            | -65           | 851               | E 2<br>m/s | 236?  | 12 hr 15.8 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      | The two Sol<br>144 reports<br>make no<br>sense unless<br>the 851 hPa is<br>a minimum<br>rather than<br>average<br>pressure. |

| 2012 DATE<br>(IN SPRING<br>AT MSL) | SOL | MAX<br>TEMP C | MIN<br>TEMP C | Pressure<br>in Pa | Wind | Ls | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS |
|------------------------------------|-----|---------------|---------------|-------------------|------|----|---|--|-------------------------------|------------------------------|---|
|------------------------------------|-----|---------------|---------------|-------------------|------|----|---|--|-------------------------------|------------------------------|---|

TABLE 3 - 2013 REMS Team & Ashima Research MSL Spring Weather reports

| Date in<br>2013  | SOL | MAX<br>TEMP<br>C | MIN<br>TEMP<br>C | Pressure<br>in Pa | Wind    | Ls    | David<br>Roffman<br>Daylight<br>Calculation | Ashima<br>Daylight<br>Post | Ashima<br>Sunrise | Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS |
|--|-----|------------------|------------------|-------------------|---------|-------|---|----------------------------|-------------------|------------------|---|
| 1/1/2013<br><br><b>No report</b>   | 145 |                  |                  |                   |         | 236.1 | 12 hr 15.8 min                              |                            |                   |                  |   |
| 1/2/2013<br><br><b>Date listed<br/>by REMS<br/>and<br/>Ashima as<br/>2 ene<br/>(Spanish<br/>for 2<br/>January)</b> | 146 | -2               | -65              | 908               |         | 236.7 | 12 hr 15.9 min                              | 11 hr                      | 6:00 AM           | 5:00 PM          |   |
| 1/3/2013<br><br><b>No report</b>   | 147 |                  |                  |                   |         | 237.4 | 12 hr 16 min                                |                            |                   |                  |   |
| 1/4/2013<br><br><b>No report</b>   | 148 |                  |                  |                   |         | 238   | 12 hr 16.1 min                              |                            |                   |                  |   |
| 1/5/2013<br><br><b>No report</b>   | 149 |                  |                  |                   |         | 238.6 | 12 hr 16.2 min                              |                            |                   |                  |   |
| 1/6/2013<br><b>(6 ene)</b>   |     | 3                | -65              | 914               | E 2 m/s | 239.3 | 12 hr 16.3 min                              | 11 hr                      | 6:00 AM           | 5:00 PM          |   |

| 2013 DATE<br>(IN SPRING<br>AT MSL)   | SOL        | MAX<br>TEMP C        | MIN<br>TEMP C | Pressure in<br>Pa | Wind       | Ls    | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS                                    |
|--|------------|----------------------|---------------|-------------------|------------|-------|---|--|-------------------------------|------------------------------|--|
| 1/7/2013 <b>7<br/>ene)</b>   | 150        | 2                    | -64           | 913               | E 2<br>m/s | 239.9 | 12 hr 16.4 min                              | 11 hr                                  | 6:00 AM                       | 5:00<br>PM                   |  |
| 1/8/2013 <b>(8<br/>ene)</b>  | <b>150</b> |                      | -65           | 915               | E 2<br>m/s | 240.5 | 12 hr 16.5 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |  |
| 1/9/2013 <b>(9<br/>ene)</b>  | 152        | 3.85                 | -62.55        | 914.5             | E 2<br>m/s | 241.2 | 12 hr 16.7 min                              | 11 hr                                  | 6:00 AM                       | 5:00<br>PM                   |  |
| 1/10/2013<br><b>(10 ene)</b>   | 153        | 3                    | -65           | 916               | E 2<br>m/s | 241.8 | 12 hr 16.8 min                              | 11 hr                                  | 6:00 AM                       | 5:00<br>PM                   |  |
| 1/11/2013<br><b>(11 ene)</b>   | 154        | 1.45                 | -64.65        | 917.7             | E 2<br>m/s | 242.4 | 12 hr 16.9 min                              | 11 hr                                  | 6:00 AM                       | 5:00<br>PM                   |  |
| 1/12/2013<br><b>(12 ene)</b>   | 155        | 2.15                 | -64.45        | 917.5             | E 2<br>m/s | 243.1 | 12 hr 17 min                                | 11 hr                                  | 6:00 AM                       | 5:00 PM                      | Ashima posts<br>Ls as 244.   |
| <b>1/12/2013<br/>(12 ene)<br/><br/>probably<br/>this<br/>second<br/>1/12/2013<br/>entry<br/>should<br/>have been<br/>labeled<br/>1/13/2013</b> | 156        | 1.86                 | -65.13        | 917.7             | E 2<br>m/s | 243.1 | 12 hr 17 min                                | 11 hr                                  | 6:00 AM                       | 5:00<br>PM                   | Ashima<br>posts Ls as<br>244. 2nd Sol<br>for Jan (ene)<br>12. Is this<br>Jan 13? |
| <b>1/13/2013<br/>(13 ene)</b>  | <b>156</b> | <b>See<br/>above</b> |               |                   |            | 243.7 | 12 hr 17.1 min                              |  |                               |                              |  |
| 1/14/2013<br><b>(14 ene)</b>   | 157        | 1.75                 | -64.42        | 920.7             | E 2 m/s    | 244.3 | 12 hr 17.2 min                              | 11 hr                                  | 6:00 AM                       | 5:00<br>PM                   |  |

| 2013 DATE<br>(IN SPRING<br>AT MSL) | SOL | MAX<br>TEMP C         | MIN<br>TEMP C | Pressure in<br>Pa | Wind    | Ls    | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS   |
|------------------------------------|-----|-----------------------|---------------|-------------------|---------|-------|---|--|-------------------------------|------------------------------|---|
| 1/15/2013<br><b>(15 ene)</b>       | 158 | 2.68                  | -66.47        | 922.99            | E 2 m/s | 245   | 12 hr 17.3 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| 1/16/2013<br><b>(16 ene)</b>       | 159 | 3.51                  | -65           | 918.47            | E 2 m/s | 245.6 | 12 hr 17.4 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| 1/17/2013                          | 160 | 1.98                  | -66.69        | 919.82            | E 2 m/s | 246.2 | 12 hr 17.5 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| 1/18/2013<br><b>(18 ene)</b>       | 161 | 0                     | -65           | 920.3             | E2 m/s  | 246.9 | 12 hr 17.6 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| 1/19/2013<br><b>(19 ene)</b>       | 162 | 1                     | -65           | 920               | E2 m/s  | 247.5 | 12 hr 17.7 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| 1/20/2013<br><b>(20 ene)</b>       | 163 | 0                     | -65           | 920               | E2 m/s  | 248.1 | 12 hr 17.8 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      | Ashima lists the Ls as 249  |
| 1/21/2013<br><b>(21 ene)</b>       | 164 | <b>0,08</b><br>(0.08) | -64.72        | 919.46            | E2 m/s  | 248.8 |   | 11 hr                                  | 6:00 AM                       | 5:00 PM                      | <b>REMS confusion about decimal point (like ene for January, an English problem).</b> |
| 1/22/2013<br><b>(22 ene)</b>       | 165 | 0.1                   | -64.66        | 923.09            | E2 m/s  | 249.4 | 12 hr 17.9 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| 1/23/2013                          | 166 | 3                     | -65           | 922               | E2 m/s  | 250   | 12 hr 18 min                                | 11 hr                                  | 6:00 AM                       | 5:00 PM                      | <b>Language back to English with Jan for January rather than ene.</b>                 |
| 1/24/2013                          | 167 | 4                     | -65           | 921               | E2 m/s  | 250.7 | 12 hr 18.1 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |

| 2013 DATE<br>(IN SPRING<br>AT MSL)  | SOL        | MAX<br>TEMP C | MIN<br>TEMP C | Pressure in<br>Pa | Wind   | Ls    | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS                         |
|---|------------|---------------|---------------|-------------------|--------|-------|---|--|-------------------------------|------------------------------|---|
| 1/25/2013   |            |               | -66           | 924               | E2 m/s | 251.3 | 12 hr 18.2 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00<br>PM                   |   |
|   | 168        | 5             |               |                   |        |       |   |  |                               |                              |   |
| 1/26/2013   | 169        | 4             | -66           | 923               | E2 m/s | 251.9 | 12 hr 18.3 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00<br>PM                   |   |
| 1/27/2013<br><b>No report</b>   | 170        |               |               |                   |        | 252.6 | 12 hr 18.3 min                              |  |                               |                              |   |
| 1/28/2013<br><b>No report</b>   | 171        |               |               |                   |        | 253.2 | 12 hr 18.4 min                              |  |                               |                              |   |
| 1/29/2013<br><b>Sol<br/>Number<br/>should be<br/>171 on<br/>1/28/2013</b> | 171        | 6             | -66           | 925               | E2 m/s | 253.9 | 12 hr 18.5 min                              |  |                               |                              |   |
| 1/30/2013   | <b>172</b> | 6             | -66           | 924               | E2 m/s | 254.5 | 12 hr 18.5 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00<br>PM                   |   |
| <b>1/31/2013</b>  | <b>173</b> | 5             | -66           | 920               | E2 m/s | ?     | 12 hr 18.6 min                              | 11 hr                                  | 6:00<br>AM                    | 6:00<br>AM                   | Ashima lists<br>Ls as 254.<br>Two sols<br>provided for<br>January 31. |
| <b>1/31/2013</b>  | <b>174</b> | 5.25          | -67           | 924.47            | E2 m/s | 255.1 | 12 hr 18.6 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00<br>PM                   |   |
| 2/1/2013<br><b>No report</b>  |            |               |               |                   |        | 255.8 | 12 hr 18.6 min                              |  |                               |                              |   |
| 2/2/2013  | 176        | 5             | -67           | 919               | E2 m/s | 256.4 | 12 hr 18.7 min                              |  |                               |                              |   |
| <b>2/3/2013</b>   | <b>177</b> | 5.2           | -66.3         | 922.35            | E2 m/s | 257   | 12 hr 18.8 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00<br>PM                   | Ashima data<br>published<br>before<br>REMS.                           |

| 2013 DATE<br>(IN SPRING<br>AT MSL) | SOL                   | MAX<br>TEMP C | MIN<br>TEMP C | Pressure in<br>Pa | Wind   | <a href="#">Ls</a> | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS  |
|------------------------------------|-----------------------|---------------|---------------|-------------------|--------|--------------------|---|--|-------------------------------|------------------------------|--|
| <b>2/4/2013</b>                    |                       |               |               |                   |        | 257.7              | 12 hr 18.8 min                              |  |                               |                              | Both REMS and Ashima list two different days for Sol 177. The 2nd one is likely Sol 178. |
|                                    | <b>177 (Sol 178?)</b> | 2             | -65.61        | 921.31            | E2 m/s |                    |   | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |  |
| 2/5/2013                           | 179                   | 4.95          | -66.25        | 921.11            | E2 m/s | 258.3              | 12 hr 18.9 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |  |
| 2/6/2013                           | 180                   | 3.9           | -66.6         | 920.27            | E2 m/s | 258.9              | 12 hr 18.9 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |  |
| 2/7/2013<br><b>No report</b>       | 181                   |               |               |                   |        | 259.6              | 12 hr 19 min                                |  |                               |                              |  |
| 2/8/2013                           | 182                   | 5.8           | -67.3         | 921.96            | E2 m/s | 260.2              | 12 hr 19 min                                | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |  |
| 2/9/2013<br><b>No report</b>       | 183                   |               |               |                   |        | 260.8              | 12 hr 19 min                                |  |                               |                              |  |
| 2/10/2013                          | 184                   | 3             | -67           | 920               | E2 m/s | 261.5              | 12 hr 19.1 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |  |
| <b>2/11/2013</b>                   | <b>185</b>            | 4             | -68           | 923               | E2 m/s | 262.1              | 12 hr 19.1 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |  |

| 2013 DATE<br>(IN SPRING<br>AT MSL)                    | SOL | MAX<br>TEMP C | MIN<br>TEMP C | Pressure in<br>Pa | Wind   | <a href="#">Ls</a> | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS |
|---|-----|---------------|---------------|-------------------|--------|--------------------|---|--|-------------------------------|------------------------------|---|
| 2/12/2013   |     |               |               |                   |        | 262.7              | 12 hr 19.2 min                              |  |                               |                              |   |
| 2/13/2013<br><br>NO<br>REPORT                         |     |               |               |                   |        | 263.4              | 12 hr 19.2 min                              |  |                               |                              |   |
| 2/14/2013<br>(3 days<br>forward, 1<br>Sol<br>forward) | 186 | 4             | -66           | 922               | E2 m/s | 264                | 12 hr 19.2 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| 2/14/2013<br>(Ashima)                                 | 187 | 6             | -67           | 922               | E2 m/s | 264                | 12 hr 19.2 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| 2/15/2013   | 188 | 2             | -68           | 920.5             | E2 m/s | 264.6              | 12 hr 19.2 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| 2/16/2013   | 189 | -1.4          | -68.3         | 921.09            | E2 m/s | 265.3              | 12 hr 19.3 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| 2/17/2013   | 190 | -2            | -67           | 918               | E2 m/s | 265.9              | 12 hr 19.3 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| 2/18/2013   | 191 | -1            | -67           | 921               | E2 m/s | 266.5              | 12 hr 19.3 min                              | 11 hr                                  | 6:00 AM                       | 5:00 PM                      |   |
| 2/19/2013<br>No report                                |     |               |               |                   |        | 267.1              | 12 hr 19.3 min                              |  |                               |                              |   |



| 2013 DATE<br>(IN SPRING<br>AT MSL) | SOL | MAX<br>TEMP C | MIN<br>TEMP C | Pressure in<br>Pa | Wind   | Ls    | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS          |
|------------------------------------|-----|---------------|---------------|-------------------|--------|-------|---|--|-------------------------------|------------------------------|--|
| 2/20/2013<br><b>No report</b>      |     |               |               |                   |        | 267.8 | 12 hr 19.3 min                              |  |                               |                              |  |
| 2/21/2013<br><b>No report</b>      |     |               |               |                   |        | 268.4 | 12 hr 19.3 min                              |  |                               |                              |  |
| 2/22/2013<br><b>No report</b>      |     |               |               |                   |        | 269   | 12 hr 19.3 min                              |  |                               |                              |  |
| 2/23/2013<br><b>No report</b>      |     |               |               |                   |        | 269.7 | 12 hr 19.3 min                              |  |                               |                              | MSL<br>Southern<br>Summer<br>Arrives at<br>Ls 270      |
| 2/24/2013                          | 191 | 4.3           | -68           | 915.8             | E2 m/s | 270.3 | 12 hr 19.3<br>min                           | 11 hr                                  | 6:00 AM                       | 5:00 PM                      | Six days<br>forward,<br>no change<br>in sol<br>number. |

**Table 4 – SUMMER WEATHER REPORTS FOR MSL**

| DATE  | SOL | MAX<br>TEMP<br>C | MIN<br>TEMP C | PRESS<br>Pa | WIND   | Ls   | Real Daylight  | Ashima<br>daylight | Ashima<br>sunrise | Ashima<br>sunset | Comments           |
|---|-----|------------------|---------------|-------------|--------|--|----------------|--------------------|-------------------|------------------|--------------------|
| 2/24/2013<br>(2 <sup>nd</sup> report<br>for<br>2/24/2013) | 198 | 4.82             | -67.1         | 914.34      | E2 m/s | 270.3<br><br>(For<br>2/25/201<br>3 the Ls<br>was<br>270.9) | 12 hr 19.3 min | 11 hr              | 6:00<br>AM        | 5:00 PM          |                    |
| 2/26/2013   | 199 | 6.34             | -66.16        | 917.55      | E2 m/s | 271.5  | 12 hr 19.3 min | 11 hr              | 6:00<br>AM        | 5:00 PM          | SOL 199<br>WAS THE |

| 2013 DATE<br>(IN SPRING<br>AT MSL)  | SOL | MAX<br>TEMP C        | MIN<br>TEMP C        | Pressure in<br>Pa    | Wind   | <a href="#">Ls</a>                                 | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS   |
|---|-----|----------------------|----------------------|----------------------|--------|--|---|--|-------------------------------|------------------------------|---|
| <b>NO MORE<br/>REPORTS<br/>PUBLISHED BY THE<br/>REMS<br/>TEAM OR<br/>ASHIMA<br/>RESEARCH<br/>UNTIL<br/>3/23/2013.</b> |     |                      |                      |                      |        |  |   |  |                               |                              | <b>LAST<br/>PUBLISHED<br/>REPORT BY<br/>BOTH THE<br/>REMS TEAM<br/>AND<br/>ASHIMA<br/>RESEARCH.</b> |
| 3/23/2013   | 222 | 3                    | -70                  | 918                  | E2 m/s | 287.1  | 12 hr 18.4 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |   |
| 3/24/2013   |     |                      |                      |                      |        |  |   |  |                               |                              |   |
| <b>NO<br/>REPORT</b>  | 223 | <b>NO<br/>REPORT</b> | <b>NO<br/>REPORT</b> | <b>NO<br/>REPORT</b> |        | 287.7  | 12 hr 18.3 min                              |  |                               |                              |   |
| 3/25/2013   | 224 | 3                    | -70                  | 894                  | E2 m/s | 288.3  | 12 hr 18.3 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | <b>EXTREMELY<br/>LARGE<br/>PRESSURE<br/>DROP FROM<br/>2 DAYS<br/>AGO (918<br/>Pa)</b>               |
| 3/25/2013<br><b>2nd<br/>REPORT<br/>with this<br/>date.</b>  | 225 | 1.27                 | -70.76               | 894.34               | E2 m/s | 288.3 for<br>March<br>25, 289.9<br>for March<br>26 | 12 hr 18 min                                | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | <b>Do REMS<br/>and Ashima<br/>mean<br/>3/26/2013?</b>   |
| 3/26/2013   | 226 | 3.63                 | -69.98               | 894.65               | E2 m/s | 288.9 for<br>March 26                              | 12 hr 18.2 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |   |
| 3/27/2013   | 227 | 4.89                 | -70.5                | 892.9                | E2 m/s | 289.5  | 12 hr 18.1 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |   |

| 2013 DATE<br>(IN SPRING<br>AT MSL)   | SOL        | MAX<br>TEMP C        | MIN<br>TEMP C        | Pressure in<br>Pa    | Wind   | Ls    | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS |
|--|------------|----------------------|----------------------|----------------------|--------|-------|---|--|-------------------------------|------------------------------|---|
| 3/28/2013  | 228        | 2.03                 | -70.65               | 894.27               | E2 m/s | 290.2 | 12 hr 18 min                                | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |   |
| 3/29/2013  | 229        | 1.39                 | -69.26               | 894.6                | E2 m/s | 290.8 | 12 hr 18 min                                | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | Ashima reports the Ls for March 29 as 292.    |
| 3/30/2013<br><b>NO<br/>REPORT</b>  | 230        | <b>NO<br/>REPORT</b> | <b>NO<br/>REPORT</b> | <b>NO<br/>REPORT</b> |        | 291.4 | 12 hr 17.9 min                              |  |                               |                              |   |
| 3/31/2013  | <b>231</b> | 1.73                 | -70.95               | 890.7                | E2 m/s | 292   | 12 hr 17.8 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |   |
| 4/1/2013   | 232        | 1.95                 | -68.99               | 888.32               | E2 m/s | 292.6 | 12 hr 17.7 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      |   |
| 4/2/2013   | <b>231</b> | 5.3                  | -69.5                | 890.2                | E2 m/s | 293.2 | 12 hr 17.6 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | REMS Team and Ashima get Sol # wrong again.   |
| 4/3/2013   | <b>231</b> | 3.05                 | -69.47               | 889.18               | E2 m/s | 293.8 | 12 hr 17.5 min                              | 11 hr                                  | 6:00<br>AM                    | 5:00 PM                      | REMS Team and Ashima get Sol # wrong again.   |
| 4/4/2013<br>through<br>4/30/2013<br><br>Not<br>Available -<br>Mars in<br>Conjunction<br>(Behind sun) |            |                      |                      |                      |        |       |   |  |                               |                              |   |
| 5/1/2013   | <b>261</b> | -4.48                | -69.75               | 868.05               | N/A    | 310.5 | 12 hr 14.4 min                              | 11 hr                                  | 6:00                          | 5:00 PM                      | After our                                     |

| 2013 DATE<br>(IN SPRING<br>AT MSL)                            | SOL | MAX<br>TEMP C | MIN<br>TEMP C | Pressure in<br>Pa | Wind           | <a href="#">Ls</a> | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS  |
|---|-----|---------------|---------------|-------------------|----------------|--------------------|---|--|-------------------------------|------------------------------|--|
|   |     |               |               |                   |                |                    |   |  | AM                            |                              | massive<br>Internet<br>campaign<br>against<br>REMS Team<br>wind reports,<br>it finally<br>shows as not<br>available. |
| 5/2/2013<br><b>NO<br/>REPORT</b>                              |     |               |               |                   |                | 311                | 12 hr 14.3 min                              |  |                               |                              | <b>Reports<br/>stopped for<br/>a week after<br/>REMS<br/>published<br/>that winds<br/>are not<br/>available.</b>     |
| 5/3/2013<br><b>NO<br/>REPORT</b>                              |     |               |               |                   |                | 311.6              | 12 hr 14.2 min                              |  |                               |                              |  |
| 5/4/2013<br><b>NO<br/>REPORT</b>                              |     |               |               |                   |                | 312.2              | 12 hr 14.1 min                              |  |                               |                              |  |
| 5/5/2013<br><b>NO<br/>REPORT</b>                              |     |               |               |                   |                | 312.8              | 12 hr 13.9 min                              |  |                               |                              |  |
| 5/6/2013<br><b>NO<br/>REPORT</b>                              |     |               |               |                   |                | 313.4              | 12 hr 13.8 min                              |  |                               |                              |  |
| 5/7/2013<br><b>REMS NO<br/>REPORT,<br/>ASHIMA<br/>REPORTS</b> | 268 | -5.0          | -70           | 864               | ASHIMA:<br>N/A | 313.9              | <b>12 hr 13.6<br/>min</b>                   | <b>12 hr12<br/>min</b>                 | <b>6:42</b>                   | <b>18:54</b>                 | <b>REMS<br/>FINALLY<br/>PUBLISHES<br/>DAY<br/>LENGTH<br/>TIMES LIKE<br/>OURS</b>                                     |

| 2013 DATE<br>(IN SPRING<br>AT MSL) | SOL | MAX<br>TEMP C        | MIN<br>TEMP C        | Pressure in<br>Pa    | Wind                                       | Ls  | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS  |
|------------------------------------|-----|----------------------|----------------------|----------------------|--|---|---|--|-------------------------------|------------------------------|--|
| 5/8/2013<br>(ASHIMA)               | 269 | 3.0<br>(ASHI<br>MA)  | -72<br>(ASHIM<br>A)  | 866<br>(ASHIM<br>A)  | REMS:<br>E2 m/s,<br><b>ASHIMA:<br/>N/A</b> | 314.5<br><br>(Ashima<br>)<br><br>315<br>Other | 12 hr<br>13.5 min                           | <b>12 hr<br/>12min</b>                 | 6:42                          | 18:54                        | <b>REMS goes<br/>back to the<br/>(erroneous)<br/>winds stuck<br/>at E 2m/s.<br/>ASHIMA<br/>DOES NOT.</b> |
| 5/8/2013<br>REMS                   | 268 | -5.0                 | -70.1                | 864.3                | REMS:<br>E2 m/s,                           | 314.5   |   |  |                               |                              |  |
| 5/9/2013<br>(ASHIMA)               | 269 | -2.6                 | -71.6                | 866.21               | REMS:<br>E2 m/s,                           | 315.1   | 12 hr 13.4 min                              |  |                               |                              |  |
| 5/10/2013<br><b>NO<br/>REPORT</b>  | 270 | <b>NO<br/>REPORT</b> | <b>NO<br/>REPORT</b> | <b>NO<br/>REPORT</b> |  |   |   |  |                               |                              |  |
| 5/11/2013<br><b>NO<br/>REPORT</b>  | 271 | <b>NO<br/>REPORT</b> | <b>NO<br/>REPORT</b> | <b>NO<br/>REPORT</b> |  |   |   |  |                               |                              |  |
| 5/12/2013<br><b>NO<br/>REPORT</b>  | 272 | <b>NO<br/>REPORT</b> | <b>NO<br/>REPORT</b> | <b>NO<br/>REPORT</b> |  |   |   |  |                               |                              |  |
| 5/13/2013<br><b>NO<br/>REPORT</b>  | 273 | <b>NO<br/>REPORT</b> | <b>NO<br/>REPORT</b> | <b>NO<br/>REPORT</b> |  |   |   |  |                               |                              |  |
| 5/14/2013                          | 274 | -3                   | -70                  | 865                  | N/A  | 317.9   | 12 hr 12.7 min                              | <b>12 hr11<br/>min</b>                 | 6:44                          | 18:55                        | <b>REMS again<br/>backs off<br/>erroneous</b>  |

| 2013 DATE<br>(IN SPRING<br>AT MSL) | SOL           | MAX<br>TEMP C | MIN<br>TEMP C | Pressure in<br>Pa | Wind | Ls    | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS   |
|------------------------------------|---------------|---------------|---------------|-------------------|------|-------|---|--|-------------------------------|------------------------------|---|
|                                    |               |               |               |                   |      |       |   |  |                               |                              | winds stuck<br>at E 2m/s,<br>lists winds<br>as N/A as we<br>demand  |
| 5/15/2013<br>NO<br>REPORT          | 275           | NO<br>REPORT  | NO<br>REPORT  | NO<br>REPORT      |      | 318.5 | 12 hr 12.5 min                              | NO REPORT                              | NO<br>REPORT                  | NO<br>REPORT                 | Probableerr<br>or with 2 Sol<br>275dates.   |
| 5/16/2013                          | 275<br>(276?) | -6            | -71           | 864               | N/A  | 319.1 | 12 hr 12.4 min                              | 12 hr11<br>min                         | 6:44                          | 18:55                        | REMS Team<br>reports Sol<br>275 as may<br>17 rather<br>than May<br>16as Ashima<br>does. Use<br>Ashima dates<br>to be in sync<br>with JPL.   |
| 5/17/2013<br>NO<br>REPORT          |               |               |               |                   |      |       |   |  |                               |                              |   |
| 5/18/2013                          | 279           | -5.25         | -68.25        | 856.28            | N/A  | 320.2 | 12 hr 12.2 min                              | 12 hr10<br>min                         | 6:45                          | 18:55                        | Ashima lists<br>Ls as 321.<br>They go 4<br>sols forward<br>for 2 days<br>forward. For<br>Ls 321 the<br>daylength is<br>12 hr 11.97<br>min. REMS<br>goes back to<br>wind 2 m/s<br>from East,<br>Ashima<br>correctly<br>does not. |

| 2013 DATE<br>(IN SPRING<br>AT MSL) | SOL        | MAX<br>TEMP C | MIN<br>TEMP C | Pressure in<br>Pa | Wind                              | <a href="#">Ls</a>                     | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS |
|------------------------------------|------------|---------------|---------------|-------------------|-----------------------------------|--|---|--|-------------------------------|------------------------------|---|
| 5/19/2013                          | 280        | -4            | -69           | 856               | N/A<br>(Ashima)                   | 320.8<br><b>(Ashima<br/>lists 322)</b> | 12 hr 12 min                                | <b>12 hr10<br/>min</b>                 | 6:45                          | 18:55                        |   |
| 5/20/2013<br><b>ASHIMA</b>         | 281        | -3            | -67           | 855               | N/A<br>(Ashima)                   | 321.4<br><b>(Ashima<br/>lists 323)</b> | 12 hr<br>11.8 min                           | <b>12 hr10<br/>min</b>                 | 6:45                          | 18:55                        |   |
| 5/21/2013<br><b>(REMS)</b>         | <b>281</b> | -3.15         | -67.15        | 855.5             | REMS:<br>E2 m/s<br>Ashima:<br>N/A | 321.9                                  | 12 hr<br>11.7 min                           | 12 hr 10<br>min                        | 6:45                          | 18:55                        |   |
| 5/22/2013                          |            |               |               |                   |                                   | 322.5                                  | 12 hr<br>11.6min                            | 12 hr 10<br>min                        | 6:45                          | 18:55                        | Ashima Day<br>length times<br>interpolated    |
| 5/23/2013                          | 283        | -4.37         | -68.13        | -855.88           | REMS:E2<br>m/s<br>Ashima:<br>N/A  | 323                                    | 12 hr 11.5min                               | 12 hr 10<br>min                        | 6:45                          | 18:55                        |   |
| 5/24/2013<br><b>NO<br/>REPORT</b>  | 284        |               |               |                   |                                   | 323.6                                  | 12 hr 11.3min                               |  |                               |                              |   |
| 5/25/2013                          | 285        | -5            | -70           | 852               |                                   | 324.2                                  | 12 hr 11.2min                               | 12 hr 9<br>min                         | 6:46                          | 18:55                        |   |
| 5/26/2013<br><b>NO<br/>REPORT</b>  | 286        |               |               |                   |                                   | 324.7                                  | 12 hr 11 min                                | 12 hr 9<br>min                         | 6:46                          | 18:55                        | Ashima Day<br>length times<br>interpolated    |
| 5/27/2013<br><b>NO<br/>REPORT</b>  | 287        |               |               |                   |                                   | 325.3                                  | 12 hr 10.8<br>min                           | 12 hr 9<br>min                         | 6:46                          | 18:55                        | Ashima Day<br>length times<br>interpolated    |

| 2013 DATE<br>(IN SPRING<br>AT MSL) | SOL        | MAX<br>TEMP C | MIN<br>TEMP C | Pressure in<br>Pa | Wind | Ls    | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS |
|------------------------------------|------------|---------------|---------------|-------------------|------|-------|---|--|-------------------------------|------------------------------|---|
| 5/28/2013                          | 288        | -4.39         | -69.15        | 853.68            | N/A  | 325.8 | 12 hr 10.7<br>min                           | 12 hr 9<br>min                         | 6:46                          | 18:55                        |   |
| 5/29/2013                          | 289        | -2.78         | -71.15        | 854.2             | N/A  | 326.4 | 12 hr 10.6<br>min                           | 12 hr 9<br>min                         | 6:46                          | 18:55                        |   |
| 5/30/2013<br><b>NO<br/>REPORT</b>  | <b>289</b> |               |               |                   |      | 327   | 12 hr 10.45<br>min                          | 12 hr 9<br>min                         | 6:46                          | 18:55                        | Ashima Day<br>length times<br>interpolated    |
| 5/31/2013                          | 290        | -3            | -71           | 850               | N/A  | 327.5 | 12 hr 10.3<br>min                           | 12 hr 9 min                            | 6:46                          | 18:55                        |   |
| 6/1/2013<br><b>NO<br/>REPORT</b>   | 291        |               |               |                   |      | 328.1 | 12 hr 10.1<br>min                           | 12 hr 9<br>min                         | 6:46                          | 18:55                        | Ashima Day<br>length times<br>interpolated    |
| 6/2/2013<br><b>NO<br/>REPORT</b>   | 292        |               |               |                   |      | 328.6 | 12 hr 10 min                                | 12 hr 9<br>min                         | 6:46                          | 18:55                        | Ashima Day<br>length times<br>interpolated    |



| 2013 DATE<br>(IN SPRING<br>AT MSL) | SOL | MAX<br>TEMP C | MIN<br>TEMP C  | Pressure in<br>Pa | Wind | Ls    | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS  |
|------------------------------------|-----|---------------|--|-------------------|------|-------|---|--|-------------------------------|------------------------------|--|
| 6/3/2013                           | 293 | -4            | -75  | 850               | N/A  | 329.2 | 12 hr 9.2 min                               | 12 hr 9 min                            | 6:46                          | 18:55                        |  |
| 6/4/2013                           | 294 | -4            | -102<br>(probable<br>error that<br>should<br>read<br>-74.44 F) | 852               | N/A  | 329.7 | 12 hr 9.8 min                               | 12 hr 9 min                            | 6:46                          | 18:55                        | Suspect low<br>temperature<br>error  |
| 6/5/2013                           | 295 | -15           | -114   | 852               | N/A  | 330.3 | 12 hr 9.6 min                               | 12 hr 8 min                            | 6:47                          | 18:55                        | Suspect low<br>temperature<br>error - low is<br>39C lower<br>(70.2F) than<br>2 days ago. |
| 6/6/2013                           | 296 | -9            | -87  | 850               | N/A  | 330.8 | 12 hr 9.5 min                               | 12 hr 7 min                            | 6:47                          | 18:54                        |  |
| 6/7/2013 NO<br>REPORT              | 297 |               |  |                   |      | 331.4 | 12 hr 9.4 min                               |  |                               |                              |  |
| 6/8/2013 NO<br>REPORT              | 298 |               |  |                   |      | 331.9 | 12 hr 9.4 min                               |  |                               |                              |  |
| 6/9/2013                           | 299 | -9            | -71  | 851               | N/A  | 332.5 | 12 hr 9.2 min                               | No Ashima<br>Report                    | N/A                           | N/A                          | Low<br>temperature<br>back to<br>normal<br>range   |
| 6/10/2013                          | 300 | -8            | -72  | 852               | N/A  | 333   | 12 hr 8.87 min                              | 12 hr 7 min                            | 6:47                          | 18:54                        |  |
| 6/11/2013                          | 301 | -6            | -73  | 852               | N/A  | 333.6 | 12 hr 9.2 min                               | 12 hr 7 min                            | 6:47                          | 18:54                        |  |
| 6/12/2013                          | 302 | -3            | -71  | 850               | N/A  | 334.1 |   | 12 hr 7 min                            | 6:47                          | 18:54                        |  |
| 6/13/2013                          |     |               |  |                   |      | 334.6 |   |  |                               |                              |  |
| 6/14/2013                          |     |               |  |                   |      | 335.2 |   |  |                               |                              |  |
| 6/15/2013                          |     |               |  |                   |      | 335.7 |   |  |                               |                              |  |
| 6/16/2013                          |     |               |  |                   |      | 336.3 |   |  |                               |                              |  |

| 2013 DATE<br>(IN SPRING<br>AT MSL) | SOL | MAX<br>TEMP C | MIN<br>TEMP C | Pressure in<br>Pa | Wind | Ls    | David<br>Roffman<br>Daylight<br>Calculation | Original<br>Ashima<br>Daylight<br>Post | Original<br>Ashima<br>Sunrise | Original<br>Ashima<br>Sunset | ERRORS at<br>REMS &<br>ASHIMA and<br>COMMENTS |
|------------------------------------|-----|---------------|---------------|-------------------|------|-------|---|--|-------------------------------|------------------------------|---|
| 6/17/2013                          |     |               |               |                   |      | 336.8 |   |  |                               |                              |   |
| 6/18/2013                          |     |               |               |                   |      | 337.3 |   |  |                               |                              |   |
| 6/19/2013                          |     |               |               |                   |      | 337.9 |   |  |                               |                              |   |
| 6/20/2013                          |     |               |               |                   |      | 338.4 |   |  |                               |                              |   |
| 6/21/2013                          |     |               |               |                   |      | 338.9 |   |  |                               |                              |   |
| 6/22/2013                          |     |               |               |                   |      | 339.5 |   |  |                               |                              |   |
| 6/23/2013                          |     |               |               |                   |      | 340   | 12 hr 6.98 min                              |  |                               |                              |   |
| 6/24/2013                          |     |               |               |                   |      | 340.5 |   |  |                               |                              |   |
| 6/25/2013                          |     |               |               |                   |      | 341.1 |   |  |                               |                              |   |
| 6/26/2013                          |     |               |               |                   |      | 341.6 |   |  |                               |                              |   |
| 6/27/2013                          |     |               |               |                   |      | 342.1 |   |  |                               |                              |   |
| 6/28/2013                          |     |               |               |                   |      | 342.7 |   |  |                               |                              |   |
| 6/29/2013                          |     |               |               |                   |      | 343.2 |   |  |                               |                              |   |
| 6/30/2013                          |     |               |               |                   |      | 343.7 |   |  |                               |                              |   |
| 7/1/2013                           |     |               |               |                   |      | 342.2 |   |  |                               |                              |   |
| 7/2/2013                           |     |               |               |                   |      | 344.8 |   |  |                               |                              |   |
| 7/3/2013                           |     |               |               |                   |      | 345.3 |   |  |                               |                              |   |
| 7/4/2013                           |     |               |               |                   |      | 345.8 |   |  |                               |                              |   |