

May 01, 2020 12:00:00 PM MDT

| Object  | Right ascens  | Declination  | Earth distance | Sun distance  |
|---------|---------------|--------------|----------------|---------------|
| Sun     | 02h 37m 30.7s | +15° 22' 36" | 0              | 0             |
| Mercury | 02h 23m 52.8s | +13° 36' 02" | 198,572,303    | 49,123,531    |
| Venus   | 05h 12m 17.7s | +27° 47' 33" | 63,448,158     | 107,943,127   |
| Mars    | 21h 40m 14.9s | -15° 40' 35" | 183,018,480    | 215,240,488   |
| Ceres   | 22h 27m 53.0s | -18° 10' 59" | 472,729,271    | 444,305,676   |
| Jupiter | 19h 56m 12.7s | -20° 53' 24" | 722,929,803    | 775,355,538   |
| Saturn  | 20h 16m 39.2s | -19° 50' 28" | 1,465,735,939  | 1,499,117,396 |
| Uranus  | 02h 18m 51.3s | +13° 23' 39" | 3,112,745,254  | 2,962,570,160 |
| Neptune | 23h 25m 45.4s | -04° 49' 10" | 4,569,722,141  | 4,477,601,884 |
| Pluto   | 19h 48m 21.7s | -21° 58' 59" | 5,045,263,025  | 5,090,975,699 |
| Moon    | 09h 50m 28.5s | +16° 56' 48" | 372,721        | 0             |

(Distances in km)

| Object  | Rise: | Tran  | Set:  | Phase   | Constl | Magnitud |
|---------|-------|-------|-------|---------|--------|----------|
| Sun     | 05:59 | 12:56 | 19:54 | 0.00%   | Ari    | unknown  |
| Mercury | 05:53 | 12:43 | 19:34 | 98.98%  | Ari    | -1.8     |
| Venus   | 07:44 | 15:31 | 23:17 | 24.26%  | Tau    | -4.5     |
| Mars    | 02:50 | 07:59 | 13:08 | 86.23%  | Cap    | 0.4      |
| Ceres   | 03:48 | 08:48 | 13:48 | 99.50%  | Aqr    | 9.2      |
| Jupiter | 01:27 | 06:16 | 11:05 | 99.11%  | Sgr    | -2.4     |
| Saturn  | 01:43 | 06:36 | 11:29 | 99.75%  | Cap    | 0.6      |
| Uranus  | 05:50 | 12:37 | 19:25 | 100.00% | Ari    | 5.9      |
| Neptune | 03:59 | 09:45 | 15:31 | 99.98%  | Aqr    | 7.9      |
| Pluto   | 01:22 | 06:07 | 10:51 | 99.98%  | Sgr    | 14.3     |
| Moon    | 13:09 | 20:23 | 02:52 | 59.96%  | Leo    | unknown  |

#### Meteor Radiant Report

| Name            | Month/Day | RA   | Decl  | Hourly Rate |
|-----------------|-----------|------|-------|-------------|
| Phi Bootids     | 05/01     | 16.0 | 51.0  | 6           |
| Alpha Scorpiids | 05/03     | 16.0 | -22.0 | 6           |
| Eta Aquarids    | 05/03     | 22.4 | -1.9  | 60          |

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| Date    | Moonrise | Moonset | Sunrise | Sunset | Begin<br>Twilight | End<br>Twilight |
|---------|----------|---------|---------|--------|-------------------|-----------------|
| 5/1/20  | 13:10    | 02:52   | 05:59   | 19:54  | 04:16             | 21:37           |
| 5/2/20  | 14:21    | 03:30   | 05:58   | 19:55  | 04:15             | 21:39           |
| 5/3/20  | 15:34    | 04:04   | 05:57   | 19:56  | 04:13             | 21:40           |
| 5/4/20  | 16:48    | 04:36   | 05:56   | 19:57  | 04:11             | 21:42           |
| 5/5/20  | 18:03    | 05:08   | 05:55   | 19:58  | 04:10             | 21:43           |
| 5/6/20  | 19:19    | 05:40   | 05:54   | 19:59  | 04:08             | 21:44           |
| 5/7/20  | 20:34    | 06:15   | 05:53   | 20:00  | 04:07             | 21:46           |
| 5/8/20  | 21:48    | 06:54   | 05:51   | 20:01  | 04:05             | 21:47           |
| 5/9/20  | 22:57    | 07:39   | 05:50   | 20:02  | 04:04             | 21:49           |
| 5/10/20 | 23:59    | 08:30   | 05:49   | 20:02  | 04:02             | 21:50           |
| 5/11/20 | -----    | 09:27   | 05:48   | 20:03  | 04:01             | 21:52           |
| 5/12/20 | 00:52    | 10:27   | 05:47   | 20:04  | 03:59             | 21:53           |
| 5/13/20 | 01:36    | 11:29   | 05:47   | 20:05  | 03:58             | 21:55           |
| 5/14/20 | 02:13    | 12:30   | 05:46   | 20:06  | 03:56             | 21:56           |
| 5/15/20 | 02:44    | 13:30   | 05:45   | 20:07  | 03:55             | 21:57           |
| 5/16/20 | 03:12    | 14:28   | 05:44   | 20:08  | 03:54             | 21:59           |
| 5/17/20 | 03:37    | 15:26   | 05:43   | 20:09  | 03:52             | 22:00           |
| 5/18/20 | 04:01    | 16:23   | 05:42   | 20:10  | 03:51             | 22:01           |
| 5/19/20 | 04:25    | 17:22   | 05:41   | 20:11  | 03:50             | 22:03           |
| 5/20/20 | 04:50    | 18:20   | 05:41   | 20:12  | 03:48             | 22:04           |
| 5/21/20 | 05:17    | 19:21   | 05:40   | 20:12  | 03:47             | 22:06           |
| 5/22/20 | 05:48    | 20:21   | 05:39   | 20:13  | 03:46             | 22:07           |
| 5/23/20 | 06:23    | 21:23   | 05:38   | 20:14  | 03:45             | 22:08           |
| 5/24/20 | 07:05    | 22:23   | 05:38   | 20:15  | 03:44             | 22:09           |
| 5/25/20 | 07:54    | 23:19   | 05:37   | 20:16  | 03:43             | 22:11           |
| 5/26/20 | 08:50    | -----   | 05:37   | 20:17  | 03:42             | 22:12           |
| 5/27/20 | 09:53    | 00:09   | 05:36   | 20:17  | 03:41             | 22:13           |
| 5/28/20 | 11:00    | 00:53   | 05:36   | 20:18  | 03:40             | 22:14           |
| 5/29/20 | 12:09    | 01:32   | 05:35   | 20:19  | 03:39             | 22:16           |
| 5/30/20 | 13:20    | 02:06   | 05:35   | 20:20  | 03:38             | 22:17           |
| 5/31/20 | 14:30    | 02:37   | 05:34   | 20:20  | 03:37             | 22:18           |

'-----' means the event does not occur on this date.