

Introduction to Reports Generated by Astronomy Lab 2

In all reports, times and dates are in standard time (not daylight savings time or summer time). Times are in 24 hour format.

Abbreviations used in reports:

AU	Astronomical Units
D	Degrees
DEC	Declination
DIST	Distance
DSO	December Solstice
E	East
FM	Full Moon
FQ	First Quarter Moon
H	Hours
ILL FR, ILLUM FRAC	Illuminated Fraction
JSO	June Solstice
KM	Kilometers
LE	Lunar Eclipse
LQ	Last Quarter Moon
M	Minutes
MEQ	March Equinox
MR	Moon Rise
MS	Moon Set
N	North
NM	New Moon
RA	Right Ascension
S	South, Seconds
SE	Solar Eclipse
SEQ	September Equinox
SR	Sunrise
SS	Sunset
UT	Universal Time
W	West
ZHR	Zenithal Hourly Rate

Calendar Report for 1/ 1/2024 to 12/31/2024

January 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 SR: 7:49 SS: 17:10 MR: 22:50 MS: 11:21	2 SR: 7:49 SS: 17:10 MR: 23:50 MS: 11:41	3 SR: 7:49 SS: 17:11 MR: None MS: 12:00 LQ: 20:33	4 SR: 7:50 SS: 17:12 MR: 0:50 MS: 12:20	5 SR: 7:50 SS: 17:13 MR: 1:52 MS: 12:42	6 SR: 7:49 SS: 17:14 MR: 2:57 MS: 13:07
7 SR: 7:49 SS: 17:15 MR: 4:06 MS: 13:39	8 SR: 7:49 SS: 17:16 MR: 5:17 MS: 14:20	9 SR: 7:49 SS: 17:17 MR: 6:27 MS: 15:12	10 SR: 7:49 SS: 17:18 MR: 7:32 MS: 16:17	11 SR: 7:49 SS: 17:19 MR: 8:28 MS: 17:32 NM: 4:58	12 SR: 7:48 SS: 17:20 MR: 9:12 MS: 18:53	13 SR: 7:48 SS: 17:21 MR: 9:48 MS: 20:13
14 SR: 7:48 SS: 17:22 MR: 10:18 MS: 21:30	15 SR: 7:47 SS: 17:23 MR: 10:44 MS: 22:45	16 SR: 7:47 SS: 17:25 MR: 11:07 MS: 23:58	17 SR: 7:47 SS: 17:26 MR: 11:31 MS: None FQ: 20:54	18 SR: 7:46 SS: 17:27 MR: 11:57 MS: 1:10	19 SR: 7:46 SS: 17:28 MR: 12:26 MS: 2:22	20 SR: 7:45 SS: 17:29 MR: 13:00 MS: 3:33
21 SR: 7:44 SS: 17:30 MR: 13:41 MS: 4:42	22 SR: 7:44 SS: 17:31 MR: 14:30 MS: 5:46	23 SR: 7:43 SS: 17:33 MR: 15:27 MS: 6:42	24 SR: 7:42 SS: 17:34 MR: 16:29 MS: 7:29	25 SR: 7:42 SS: 17:35 MR: 17:33 MS: 8:07 FM: 10:55	26 SR: 7:41 SS: 17:36 MR: 18:37 MS: 8:38	27 SR: 7:40 SS: 17:37 MR: 19:40 MS: 9:03
28 SR: 7:39 SS: 17:39 MR: 20:40 MS: 9:25	29 SR: 7:38 SS: 17:40 MR: 21:40 MS: 9:45	30 SR: 7:38 SS: 17:41 MR: 22:39 MS: 10:04	31 SR: 7:37 SS: 17:42 MR: 23:40 MS: 10:23			

February 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
				SR: 7:36	SR: 7:35	SR: 7:34
				SS: 17:44	SS: 17:45	SS: 17:46
				MR: None	MR: 0:42	MR: 1:48
				MS: 10:43	MS: 11:07	MS: 11:35
					LQ: 16:20	
4	5	6	7	8	9	10
SR: 7:33	SR: 7:32	SR: 7:31	SR: 7:30	SR: 7:28	SR: 7:27	SR: 7:26
SS: 17:47	SS: 17:49	SS: 17:50	SS: 17:51	SS: 17:52	SS: 17:53	SS: 17:55
MR: 2:56	MR: 4:06	MR: 5:12	MR: 6:12	MR: 7:02	MR: 7:42	MR: 8:15
MS: 12:10	MS: 12:55	MS: 13:53	MS: 15:03	MS: 16:22	MS: 17:44	MS: 19:05
					NM: 16:01	
11	12	13	14	15	16	17
SR: 7:25	SR: 7:24	SR: 7:22	SR: 7:21	SR: 7:20	SR: 7:19	SR: 7:17
SS: 17:56	SS: 17:57	SS: 17:58	SS: 17:59	SS: 18:01	SS: 18:02	SS: 18:03
MR: 8:43	MR: 9:08	MR: 9:33	MR: 9:59	MR: 10:27	MR: 11:00	MR: 11:39
MS: 20:24	MS: 21:41	MS: 22:56	MS: None	MS: 0:10	MS: 1:24	MS: 2:35
					FQ: 8:02	
18	19	20	21	22	23	24
SR: 7:16	SR: 7:15	SR: 7:13	SR: 7:12	SR: 7:10	SR: 7:09	SR: 7:08
SS: 18:04	SS: 18:05	SS: 18:07	SS: 18:08	SS: 18:09	SS: 18:10	SS: 18:11
MR: 12:26	MR: 13:20	MR: 14:21	MR: 15:24	MR: 16:28	MR: 17:31	MR: 18:32
MS: 3:41	MS: 4:39	MS: 5:28	MS: 6:08	MS: 6:41	MS: 7:07	MS: 7:30
						FM: 5:31
25	26	27	28	29		
SR: 7:06	SR: 7:05	SR: 7:03	SR: 7:02	SR: 7:00		
SS: 18:12	SS: 18:14	SS: 18:15	SS: 18:16	SS: 18:17		
MR: 19:32	MR: 20:32	MR: 21:32	MR: 22:33	MR: 23:37		
MS: 7:50	MS: 8:09	MS: 8:28	MS: 8:48	MS: 9:09		

March 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
					SR: 6:59	SR: 6:57
					SS: 18:18	SS: 18:19
					MR: None	MR: 0:43
					MS: 9:35	MS: 10:06
3	4	5	6	7	8	9
SR: 6:56	SR: 6:54	SR: 6:52	SR: 6:51	SR: 6:49	SR: 6:48	SR: 6:46
SS: 18:20	SS: 18:21	SS: 18:23	SS: 18:24	SS: 18:25	SS: 18:26	SS: 18:27
MR: 1:50	MR: 2:57	MR: 3:58	MR: 4:50	MR: 5:34	MR: 6:10	MR: 6:40
MS: 10:46	MS: 11:36	MS: 12:39	MS: 13:52	MS: 15:11	MS: 16:32	MS: 17:53
LQ: 8:25						
10	11	12	13	14	15	16
SR: 6:45	SR: 6:43	SR: 6:41	SR: 6:40	SR: 6:38	SR: 6:36	SR: 6:35
SS: 18:28	SS: 18:29	SS: 18:30	SS: 18:31	SS: 18:32	SS: 18:33	SS: 18:35
MR: 7:07	MR: 7:32	MR: 7:57	MR: 8:25	MR: 8:57	MR: 9:35	MR: 10:20
MS: 19:12	MS: 20:31	MS: 21:48	MS: 23:05	MS: None	MS: 0:21	MS: 1:31
NM: 2:03						FQ: 21:12
17	18	19	20	21	22	23
SR: 6:33	SR: 6:32	SR: 6:30	SR: 6:28	SR: 6:27	SR: 6:25	SR: 6:23
SS: 18:36	SS: 18:37	SS: 18:38	SS: 18:39	SS: 18:40	SS: 18:41	SS: 18:42
MR: 11:14	MR: 12:13	MR: 13:16	MR: 14:20	MR: 15:23	MR: 16:25	MR: 17:25
MS: 2:34	MS: 3:27	MS: 4:10	MS: 4:44	MS: 5:12	MS: 5:36	MS: 5:56
		MEQ: 20:01				
24	25	26	27	28	29	30
SR: 6:22	SR: 6:20	SR: 6:18	SR: 6:17	SR: 6:15	SR: 6:13	SR: 6:12
SS: 18:43	SS: 18:44	SS: 18:45	SS: 18:46	SS: 18:47	SS: 18:48	SS: 18:49
MR: 18:25	MR: 19:25	MR: 20:26	MR: 21:29	MR: 22:34	MR: 23:41	MR: None
MS: 6:15	MS: 6:34	MS: 6:53	MS: 7:14	MS: 7:39	MS: 8:08	MS: 8:44
	FM: 0:02					
31						
SR: 6:10						
SS: 18:50						
MR: 0:47						
MS: 9:30						

April 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 SR: 6:09 SS: 18:51 MR: 1:49 MS: 10:26 LQ: 20:16	2 SR: 6:07 SS: 18:52 MR: 2:43 MS: 11:33	3 SR: 6:05 SS: 18:53 MR: 3:29 MS: 12:47	4 SR: 6:04 SS: 18:54 MR: 4:06 MS: 14:05	5 SR: 6:02 SS: 18:55 MR: 4:37 MS: 15:24	6 SR: 6:00 SS: 18:56 MR: 5:05 MS: 16:42
7 SR: 5:59 SS: 18:57 MR: 5:30 MS: 18:00	8 SR: 5:57 SS: 18:59 MR: 5:55 MS: 19:18 NM: 11:23 SE: 11:21	9 SR: 5:56 SS: 19:00 MR: 6:22 MS: 20:37	10 SR: 5:54 SS: 19:01 MR: 6:52 MS: 21:56	11 SR: 5:53 SS: 19:02 MR: 7:28 MS: 23:12	12 SR: 5:51 SS: 19:03 MR: 8:11 MS: None	13 SR: 5:50 SS: 19:04 MR: 9:03 MS: 0:21
14 SR: 5:48 SS: 19:05 MR: 10:02 MS: 1:20	15 SR: 5:46 SS: 19:06 MR: 11:05 MS: 2:07 FQ: 12:14	16 SR: 5:45 SS: 19:07 MR: 12:10 MS: 2:45	17 SR: 5:43 SS: 19:08 MR: 13:14 MS: 3:15	18 SR: 5:42 SS: 19:09 MR: 14:16 MS: 3:40	19 SR: 5:41 SS: 19:10 MR: 15:17 MS: 4:02	20 SR: 5:39 SS: 19:11 MR: 16:17 MS: 4:21
21 SR: 5:38 SS: 19:12 MR: 17:16 MS: 4:40	22 SR: 5:36 SS: 19:13 MR: 18:17 MS: 4:59	23 SR: 5:35 SS: 19:14 MR: 19:20 MS: 5:20 FM: 16:51	24 SR: 5:33 SS: 19:15 MR: 20:26 MS: 5:43	25 SR: 5:32 SS: 19:16 MR: 21:33 MS: 6:10	26 SR: 5:31 SS: 19:17 MR: 22:40 MS: 6:45	27 SR: 5:29 SS: 19:18 MR: 23:43 MS: 7:27
28 SR: 5:28 SS: 19:19 MR: None MS: 8:20	29 SR: 5:27 SS: 19:20 MR: 0:40 MS: 9:24	30 SR: 5:25 SS: 19:21 MR: 1:27 MS: 10:35				

May 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1 SR: 5:24 SS: 19:22 MR: 2:06 MS: 11:49 LQ: 4:28	2 SR: 5:23 SS: 19:23 MR: 2:38 MS: 13:05	3 SR: 5:22 SS: 19:24 MR: 3:06 MS: 14:21	4 SR: 5:20 SS: 19:25 MR: 3:31 MS: 15:36
5 SR: 5:19 SS: 19:26 MR: 3:55 MS: 16:52	6 SR: 5:18 SS: 19:28 MR: 4:20 MS: 18:09	7 SR: 5:17 SS: 19:29 MR: 4:48 MS: 19:28 NM: 20:24	8 SR: 5:16 SS: 19:30 MR: 5:21 MS: 20:46	9 SR: 5:15 SS: 19:31 MR: 6:01 MS: 22:00	10 SR: 5:14 SS: 19:32 MR: 6:49 MS: 23:05	11 SR: 5:13 SS: 19:33 MR: 7:46 MS: 23:59
12 SR: 5:12 SS: 19:34 MR: 8:50 MS: None	13 SR: 5:11 SS: 19:34 MR: 9:56 MS: 0:42	14 SR: 5:10 SS: 19:35 MR: 11:02 MS: 1:16	15 SR: 5:09 SS: 19:36 MR: 12:05 MS: 1:43 FQ: 4:50	16 SR: 5:08 SS: 19:37 MR: 13:07 MS: 2:06	17 SR: 5:07 SS: 19:38 MR: 14:07 MS: 2:26	18 SR: 5:06 SS: 19:39 MR: 15:06 MS: 2:45
19 SR: 5:05 SS: 19:40 MR: 16:07 MS: 3:04	20 SR: 5:05 SS: 19:41 MR: 17:09 MS: 3:24	21 SR: 5:04 SS: 19:42 MR: 18:13 MS: 3:46	22 SR: 5:03 SS: 19:43 MR: 19:21 MS: 4:12	23 SR: 5:02 SS: 19:44 MR: 20:29 MS: 4:44 FM: 6:56	24 SR: 5:02 SS: 19:45 MR: 21:35 MS: 5:25	25 SR: 5:01 SS: 19:45 MR: 22:35 MS: 6:15
26 SR: 5:00 SS: 19:46 MR: 23:25 MS: 7:16	27 SR: 5:00 SS: 19:47 MR: None MS: 8:26	28 SR: 4:59 SS: 19:48 MR: 0:07 MS: 9:40	29 SR: 4:59 SS: 19:49 MR: 0:41 MS: 10:55	30 SR: 4:58 SS: 19:49 MR: 1:09 MS: 12:09 LQ: 10:14	31 SR: 4:58 SS: 19:50 MR: 1:34 MS: 13:23	

June 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1 SR: 4:57 SS: 19:51 MR: 1:58 MS: 14:36
2 SR: 4:57 SS: 19:52 MR: 2:21 MS: 15:50	3 SR: 4:57 SS: 19:52 MR: 2:47 MS: 17:06	4 SR: 4:56 SS: 19:53 MR: 3:17 MS: 18:23	5 SR: 4:56 SS: 19:54 MR: 3:53 MS: 19:38	6 SR: 4:56 SS: 19:54 MR: 4:38 MS: 20:47 NM: 5:40	7 SR: 4:55 SS: 19:55 MR: 5:31 MS: 21:47	8 SR: 4:55 SS: 19:55 MR: 6:33 MS: 22:35
9 SR: 4:55 SS: 19:56 MR: 7:39 MS: 23:13	10 SR: 4:55 SS: 19:56 MR: 8:46 MS: 23:43	11 SR: 4:55 SS: 19:57 MR: 9:52 MS: None	12 SR: 4:55 SS: 19:57 MR: 10:55 MS: 0:08	13 SR: 4:55 SS: 19:58 MR: 11:55 MS: 0:29 FQ: 22:20	14 SR: 4:55 SS: 19:58 MR: 12:55 MS: 0:49	15 SR: 4:55 SS: 19:58 MR: 13:55 MS: 1:08
16 SR: 4:55 SS: 19:59 MR: 14:56 MS: 1:27	17 SR: 4:55 SS: 19:59 MR: 15:59 MS: 1:48	18 SR: 4:55 SS: 19:59 MR: 17:05 MS: 2:12	19 SR: 4:55 SS: 20:00 MR: 18:13 MS: 2:42	20 SR: 4:56 SS: 20:00 MR: 19:21 MS: 3:19	21 SR: 4:56 SS: 20:00 MR: 20:25 MS: 4:06 FM: 18:11	22 SR: 4:56 SS: 20:00 MR: 21:20 MS: 5:05
23 SR: 4:56 SS: 20:00 MR: 22:05 MS: 6:13	24 SR: 4:57 SS: 20:00 MR: 22:42 MS: 7:28	25 SR: 4:57 SS: 20:01 MR: 23:12 MS: 8:44	26 SR: 4:57 SS: 20:01 MR: 23:38 MS: 10:00	27 SR: 4:58 SS: 20:01 MR: None MS: 11:14	28 SR: 4:58 SS: 20:01 MR: 0:02 MS: 12:27 LQ: 14:55	29 SR: 4:59 SS: 20:00 MR: 0:25 MS: 13:39
30 SR: 4:59 SS: 20:00 MR: 0:50 MS: 14:53						

July 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 SR: 4:59 SS: 20:00 MR: 1:18 MS: 16:08	2 SR: 5:00 SS: 20:00 MR: 1:51 MS: 17:22	3 SR: 5:01 SS: 20:00 MR: 2:31 MS: 18:32	4 SR: 5:01 SS: 20:00 MR: 3:20 MS: 19:35	5 SR: 5:02 SS: 19:59 MR: 4:18 MS: 20:27 NM: 15:59	6 SR: 5:02 SS: 19:59 MR: 5:23 MS: 21:09
7 SR: 5:03 SS: 19:59 MR: 6:30 MS: 21:42	8 SR: 5:04 SS: 19:58 MR: 7:37 MS: 22:09	9 SR: 5:04 SS: 19:58 MR: 8:42 MS: 22:32	10 SR: 5:05 SS: 19:58 MR: 9:43 MS: 22:52	11 SR: 5:06 SS: 19:57 MR: 10:44 MS: 23:11	12 SR: 5:06 SS: 19:57 MR: 11:43 MS: 23:30	13 SR: 5:07 SS: 19:56 MR: 12:43 MS: 23:50 FQ: 15:50
14 SR: 5:08 SS: 19:55 MR: 13:45 MS: None	15 SR: 5:09 SS: 19:55 MR: 14:49 MS: 0:12	16 SR: 5:10 SS: 19:54 MR: 15:56 MS: 0:39	17 SR: 5:10 SS: 19:54 MR: 17:03 MS: 1:12	18 SR: 5:11 SS: 19:53 MR: 18:09 MS: 1:55	19 SR: 5:12 SS: 19:52 MR: 19:08 MS: 2:48	20 SR: 5:13 SS: 19:51 MR: 19:59 MS: 3:54
21 SR: 5:14 SS: 19:51 MR: 20:39 MS: 5:08 FM: 3:20	22 SR: 5:15 SS: 19:50 MR: 21:13 MS: 6:26	23 SR: 5:15 SS: 19:49 MR: 21:41 MS: 7:45	24 SR: 5:16 SS: 19:48 MR: 22:06 MS: 9:01	25 SR: 5:17 SS: 19:47 MR: 22:30 MS: 10:16	26 SR: 5:18 SS: 19:46 MR: 22:54 MS: 11:30	27 SR: 5:19 SS: 19:45 MR: 23:21 MS: 12:44 LQ: 19:54
28 SR: 5:20 SS: 19:44 MR: 23:52 MS: 13:59	29 SR: 5:21 SS: 19:43 MR: None MS: 15:13	30 SR: 5:22 SS: 19:42 MR: 0:29 MS: 16:24	31 SR: 5:23 SS: 19:41 MR: 1:15 MS: 17:28			

August 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
				SR: 5:24	SR: 5:25	SR: 5:26
				SS: 19:40	SS: 19:39	SS: 19:38
				MR: 2:09	MR: 3:11	MR: 4:17
				MS: 18:23	MS: 19:07	MS: 19:43
4	5	6	7	8	9	10
SR: 5:27	SR: 5:28	SR: 5:29	SR: 5:29	SR: 5:30	SR: 5:31	SR: 5:32
SS: 19:37	SS: 19:36	SS: 19:34	SS: 19:33	SS: 19:32	SS: 19:31	SS: 19:29
MR: 5:24	MR: 6:29	MR: 7:32	MR: 8:33	MR: 9:33	MR: 10:32	MR: 11:33
MS: 20:11	MS: 20:35	MS: 20:56	MS: 21:15	MS: 21:34	MS: 21:53	MS: 22:14
NM: 4:14						
11	12	13	14	15	16	17
SR: 5:33	SR: 5:34	SR: 5:35	SR: 5:36	SR: 5:37	SR: 5:38	SR: 5:39
SS: 19:28	SS: 19:27	SS: 19:25	SS: 19:24	SS: 19:23	SS: 19:21	SS: 19:20
MR: 12:35	MR: 13:40	MR: 14:46	MR: 15:52	MR: 16:54	MR: 17:48	MR: 18:33
MS: 22:39	MS: 23:08	MS: 23:45	MS: None	MS: 0:33	MS: 1:32	MS: 2:42
	FQ: 8:20					
18	19	20	21	22	23	24
SR: 5:40	SR: 5:41	SR: 5:42	SR: 5:43	SR: 5:44	SR: 5:45	SR: 5:46
SS: 19:18	SS: 19:17	SS: 19:15	SS: 19:14	SS: 19:12	SS: 19:11	SS: 19:09
MR: 19:09	MR: 19:40	MR: 20:07	MR: 20:32	MR: 20:56	MR: 21:23	MR: 21:53
MS: 3:59	MS: 5:19	MS: 6:39	MS: 7:57	MS: 9:14	MS: 10:30	MS: 11:47
	FM: 11:29					
25	26	27	28	29	30	31
SR: 5:47	SR: 5:48	SR: 5:49	SR: 5:50	SR: 5:51	SR: 5:52	SR: 5:53
SS: 19:08	SS: 19:06	SS: 19:05	SS: 19:03	SS: 19:02	SS: 19:00	SS: 18:58
MR: 22:28	MR: 23:12	MR: None	MR: 0:04	MR: 1:03	MR: 2:08	MR: 3:14
MS: 13:03	MS: 14:16	MS: 15:23	MS: 16:20	MS: 17:07	MS: 17:45	MS: 18:15
	LQ: 2:29					

September 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 SR: 5:54 SS: 18:57 MR: 4:20 MS: 18:40	2 SR: 5:55 SS: 18:55 MR: 5:23 MS: 19:01 NM: 18:57	3 SR: 5:56 SS: 18:54 MR: 6:25 MS: 19:21	4 SR: 5:57 SS: 18:52 MR: 7:24 MS: 19:39	5 SR: 5:58 SS: 18:50 MR: 8:24 MS: 19:58	6 SR: 5:59 SS: 18:49 MR: 9:24 MS: 20:18	7 SR: 6:00 SS: 18:47 MR: 10:25 MS: 20:41
8 SR: 6:01 SS: 18:45 MR: 11:29 MS: 21:08	9 SR: 6:02 SS: 18:44 MR: 12:33 MS: 21:41	10 SR: 6:02 SS: 18:42 MR: 13:38 MS: 22:23 FQ: 23:07	11 SR: 6:03 SS: 18:40 MR: 14:40 MS: 23:16	12 SR: 6:04 SS: 18:39 MR: 15:36 MS: None	13 SR: 6:05 SS: 18:37 MR: 16:24 MS: 0:19	14 SR: 6:06 SS: 18:35 MR: 17:04 MS: 1:32
15 SR: 6:07 SS: 18:34 MR: 17:37 MS: 2:49	16 SR: 6:08 SS: 18:32 MR: 18:05 MS: 4:09	17 SR: 6:09 SS: 18:30 MR: 18:31 MS: 5:28 FM: 19:37 LE: 19:47	18 SR: 6:10 SS: 18:29 MR: 18:56 MS: 6:47	19 SR: 6:11 SS: 18:27 MR: 19:22 MS: 8:06	20 SR: 6:12 SS: 18:25 MR: 19:51 MS: 9:25	21 SR: 6:13 SS: 18:24 MR: 20:26 MS: 10:45
22 SR: 6:14 SS: 18:22 MR: 21:07 MS: 12:02	23 SR: 6:15 SS: 18:20 MR: 21:57 MS: 13:14	24 SR: 6:16 SS: 18:19 MR: 22:56 MS: 14:16 LQ: 11:53	25 SR: 6:17 SS: 18:17 MR: None MS: 15:07	26 SR: 6:18 SS: 18:15 MR: None MS: 15:47	27 SR: 6:19 SS: 18:14 MR: 1:06 MS: 16:19	28 SR: 6:20 SS: 18:12 MR: 2:12 MS: 16:45
29 SR: 6:21 SS: 18:10 MR: 3:16 MS: 17:08	30 SR: 6:22 SS: 18:09 MR: 4:17 MS: 17:27					

October 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
		SR: 6:23	SR: 6:24	SR: 6:25	SR: 6:26	SR: 6:27
		SS: 18:07	SS: 18:05	SS: 18:04	SS: 18:02	SS: 18:00
		MR: 5:17	MR: 6:17	MR: 7:17	MR: 8:18	MR: 9:20
		MS: 17:46	MS: 18:04	MS: 18:24	MS: 18:46	MS: 19:11
			NM: 11:51			
			SE: 11:46			
6	7	8	9	10	11	12
SR: 6:28	SR: 6:29	SR: 6:30	SR: 6:31	SR: 6:32	SR: 6:33	SR: 6:34
SS: 17:59	SS: 17:57	SS: 17:56	SS: 17:54	SS: 17:53	SS: 17:51	SS: 17:49
MR: 10:25	MR: 11:29	MR: 12:31	MR: 13:28	MR: 14:18	MR: 14:59	MR: 15:34
MS: 19:42	MS: 20:20	MS: 21:08	MS: 22:06	MS: 23:13	MS: None	MS: 0:26
				FQ: 11:56		
13	14	15	16	17	18	19
SR: 6:35	SR: 6:37	SR: 6:38	SR: 6:39	SR: 6:40	SR: 6:41	SR: 6:42
SS: 17:48	SS: 17:46	SS: 17:45	SS: 17:43	SS: 17:42	SS: 17:40	SS: 17:39
MR: 16:03	MR: 16:29	MR: 16:54	MR: 17:19	MR: 17:47	MR: 18:20	MR: 18:59
MS: 1:42	MS: 2:59	MS: 4:16	MS: 5:35	MS: 6:54	MS: 8:16	MS: 9:37
				FM: 4:28		
20	21	22	23	24	25	26
SR: 6:43	SR: 6:44	SR: 6:45	SR: 6:46	SR: 6:48	SR: 6:49	SR: 6:50
SS: 17:38	SS: 17:36	SS: 17:35	SS: 17:33	SS: 17:32	SS: 17:31	SS: 17:29
MR: 19:47	MR: 20:44	MR: 21:48	MR: 22:56	MR: None	MR: 0:03	MR: 1:08
MS: 10:55	MS: 12:04	MS: 13:01	MS: 13:46	MS: 14:21	MS: 14:50	MS: 15:13
				LQ: 1:05		
27	28	29	30	31		
SR: 6:51	SR: 6:52	SR: 6:53	SR: 6:54	SR: 6:56		
SS: 17:28	SS: 17:27	SS: 17:25	SS: 17:24	SS: 17:23		
MR: 2:10	MR: 3:10	MR: 4:10	MR: 5:09	MR: 6:10		
MS: 15:33	MS: 15:52	MS: 16:11	MS: 16:30	MS: 16:51		

November 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 SR: 6:57 SS: 17:22 MR: 7:12 MS: 17:15 NM: 5:48	2 SR: 6:58 SS: 17:21 MR: 8:16 MS: 17:44
3 SR: 6:59 SS: 17:19 MR: 9:21 MS: 18:20	4 SR: 7:00 SS: 17:18 MR: 10:25 MS: 19:05	5 SR: 7:01 SS: 17:17 MR: 11:23 MS: 20:00	6 SR: 7:03 SS: 17:16 MR: 12:15 MS: 21:03	7 SR: 7:04 SS: 17:15 MR: 12:58 MS: 22:13	8 SR: 7:05 SS: 17:14 MR: 13:33 MS: 23:26 FQ: 22:57	9 SR: 7:06 SS: 17:13 MR: 14:03 MS: None
10 SR: 7:07 SS: 17:12 MR: 14:29 MS: 0:39	11 SR: 7:08 SS: 17:11 MR: 14:54 MS: 1:53	12 SR: 7:10 SS: 17:10 MR: 15:18 MS: 3:08	13 SR: 7:11 SS: 17:10 MR: 15:44 MS: 4:25	14 SR: 7:12 SS: 17:09 MR: 16:13 MS: 5:44	15 SR: 7:13 SS: 17:08 MR: 16:49 MS: 7:05 FM: 14:30	16 SR: 7:14 SS: 17:07 MR: 17:33 MS: 8:26
17 SR: 7:15 SS: 17:06 MR: 18:27 MS: 9:41	18 SR: 7:17 SS: 17:06 MR: 19:30 MS: 10:46	19 SR: 7:18 SS: 17:05 MR: 20:39 MS: 11:38	20 SR: 7:19 SS: 17:04 MR: 21:48 MS: 12:19	21 SR: 7:20 SS: 17:04 MR: 22:56 MS: 12:50	22 SR: 7:21 SS: 17:03 MR: 24:00 MS: 13:16 LQ: 18:30	23 SR: 7:22 SS: 17:03 MR: None MS: 13:38
24 SR: 7:23 SS: 17:02 MR: 1:01 MS: 13:57	25 SR: 7:24 SS: 17:02 MR: 2:01 MS: 14:16	26 SR: 7:25 SS: 17:01 MR: 3:00 MS: 14:35	27 SR: 7:27 SS: 17:01 MR: 4:00 MS: 14:55	28 SR: 7:28 SS: 17:00 MR: 5:02 MS: 15:18	29 SR: 7:29 SS: 17:00 MR: 6:06 MS: 15:46	30 SR: 7:30 SS: 17:00 MR: 7:11 MS: 16:20 NM: 23:22

December 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 SR: 7:31 SS: 17:00 MR: 8:16 MS: 17:02	2 SR: 7:32 SS: 16:59 MR: 9:17 MS: 17:55	3 SR: 7:33 SS: 16:59 MR: 10:12 MS: 18:56	4 SR: 7:34 SS: 16:59 MR: 10:57 MS: 20:05	5 SR: 7:35 SS: 16:59 MR: 11:35 MS: 21:17	6 SR: 7:35 SS: 16:59 MR: 12:06 MS: 22:29	7 SR: 7:36 SS: 16:59 MR: 12:32 MS: 23:41
8 SR: 7:37 SS: 16:59 MR: 12:56 MS: None FQ: 8:28	9 SR: 7:38 SS: 16:59 MR: 13:20 MS: 0:53	10 SR: 7:39 SS: 16:59 MR: 13:44 MS: 2:06	11 SR: 7:40 SS: 16:59 MR: 14:11 MS: 3:21	12 SR: 7:40 SS: 16:59 MR: 14:42 MS: 4:39	13 SR: 7:41 SS: 17:00 MR: 15:21 MS: 5:58	14 SR: 7:42 SS: 17:00 MR: 16:10 MS: 7:15
15 SR: 7:43 SS: 17:00 MR: 17:09 MS: 8:26 FM: 2:03	16 SR: 7:43 SS: 17:00 MR: 18:17 MS: 9:25	17 SR: 7:44 SS: 17:01 MR: 19:28 MS: 10:11	18 SR: 7:45 SS: 17:01 MR: 20:38 MS: 10:47	19 SR: 7:45 SS: 17:02 MR: 21:45 MS: 11:16	20 SR: 7:46 SS: 17:02 MR: 22:49 MS: 11:40	21 SR: 7:46 SS: 17:03 MR: 23:50 MS: 12:00 DSO: 2:18
22 SR: 7:47 SS: 17:03 MR: None MS: 12:19 LQ: 15:20	23 SR: 7:47 SS: 17:04 MR: 0:49 MS: 12:38	24 SR: 7:47 SS: 17:04 MR: 1:49 MS: 12:58	25 SR: 7:48 SS: 17:05 MR: 2:50 MS: 13:20	26 SR: 7:48 SS: 17:06 MR: 3:53 MS: 13:46	27 SR: 7:48 SS: 17:06 MR: 4:57 MS: 14:17	28 SR: 7:49 SS: 17:07 MR: 6:03 MS: 14:56
29 SR: 7:49 SS: 17:08 MR: 7:06 MS: 15:46	30 SR: 7:49 SS: 17:09 MR: 8:04 MS: 16:45 NM: 15:28	31 SR: 7:49 SS: 17:09 MR: 8:54 MS: 17:53				

Midway, UT (JMC) Latitude: 40°30'43" N Longitude: 111°28'40" W
 Local Time = UT - 7.00 hours Elevation: 1706 meters Year 2024
 Page 14

Seasons Report for 2024

MEQ: 3/19/2024 20:01 Winter Length: 88.99 days
 JSO: 6/20/2024 13:50 Spring Length: 92.74 days
 SEQ: 9/22/2024 5:41 Summer Length: 93.66 days
 DSO: 12/21/2024 2:18 Autumn Length: 89.86 days

Dates of Easter Report for 2024

3/31/2024

Lunar Eclipse Report for 2024

Lunar eclipse on 9/17/2024
 Moon rise: 18:31
 Moon set: 5:28
 Magnitude: 0.08
 Partial phase begins: 19:18
 Time of maximum eclipse: 19:47
 Partial phase ends: 20:17

Solar Eclipse Report for 2024

Solar eclipse on 4/ 8/2024
 Sun rise: 5:57
 Sun set: 18:59
 Time of maximum eclipse: 11:21
 Eclipse is total
 Eclipse is visible in the northern hemisphere

Solar eclipse on 10/ 2/2024
 Sun rise: 6:24
 Sun set: 18:05
 Time of maximum eclipse: 11:46
 Eclipse is annular
 Eclipse is visible in the southern hemisphere

The time of maximum eclipse (above) does not necessarily specify when the eclipse will be maximal when viewed from the specified location.

To see how the eclipse will look at the specified location, run a Planetarium movie of the eclipse.

Planet View Info Report for 1/ 1/2024 to 12/31/2024

Mercury

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
1/ 1/2024	6:20	15:58	17h27m07s	-20°09'23"	18°01'10"	0.270	0.77767
1/ 8/2024	6:07	15:39	17h36m07s	-21°01'51"	22°51'37"	0.520	0.92147
1/15/2024	6:13	15:36	18h04m12s	-22°12'47"	23°22'06"	0.684	1.05772
1/22/2024	6:27	15:45	18h41m39s	-22°54'40"	21°51'20"	0.788	1.17090
1/29/2024	6:41	16:01	19h23m53s	-22°45'58"	19°17'51"	0.856	1.25966
2/ 5/2024	6:53	16:24	20h08m40s	-21°36'57"	16°02'37"	0.906	1.32544
2/12/2024	7:02	16:52	20h54m54s	-19°22'55"	12°10'41"	0.945	1.36907
2/19/2024	7:08	17:26	21h42m01s	-16°01'42"	7°41'04"	0.976	1.38935
2/26/2024	7:12	18:03	22h29m50s	-11°32'58"	2°47'50"	0.996	1.38168

Midway, UT (JMC) Latitude: 40°30'43" N Longitude: 111°28'40" W
 Local Time = UT - 7.00 hours Elevation: 1706 meters Year 2024
 Page 15

3/ 4/2024	7:13	18:44	23h18m19s	-6°00'40"	4°23'44"	0.988	1.33628
3/11/2024	7:12	19:26	0h06m30s	0°17'36"	10°42'22"	0.909	1.23886
3/18/2024	7:06	20:03	0h50m35s	6°32'12"	16°19'04"	0.708	1.08314
3/25/2024	6:53	20:21	1h22m53s	11°20'21"	18°42'02"	0.424	0.89520
4/ 1/2024	6:30	20:09	1h36m03s	13°29'22"	15°44'21"	0.172	0.72586
4/ 8/2024	5:59	19:27	1h29m15s	12°30'52"	7°14'07"	0.026	0.61442
4/15/2024	5:27	18:31	1h12m37s	9°16'39"	5°27'28"	0.012	0.57608
4/22/2024	5:00	17:43	1h01m31s	6°03'57"	15°52'04"	0.101	0.60264
4/29/2024	4:40	17:16	1h03m48s	4°36'48"	22°47'22"	0.226	0.67288
5/ 6/2024	4:26	17:08	1h18m55s	5°10'28"	25°57'03"	0.350	0.76831
5/13/2024	4:16	17:15	1h44m06s	7°20'56"	26°07'17"	0.467	0.87819
5/20/2024	4:11	17:35	2h17m35s	10°40'22"	23°56'09"	0.586	0.99650
5/27/2024	4:10	18:05	2h59m09s	14°42'58"	19°42'49"	0.716	1.11707
6/ 3/2024	4:17	18:46	3h49m43s	18°58'06"	13°34'21"	0.856	1.22770
6/10/2024	4:35	19:35	4h49m52s	22°38'39"	5°45'55"	0.972	1.30469
6/17/2024	5:06	20:23	5h56m25s	24°42'15"	3°08'29"	0.992	1.32039
6/24/2024	5:45	20:57	7h01m35s	24°33'07"	11°08'49"	0.907	1.27172
7/ 1/2024	6:23	21:15	7h59m03s	22°30'49"	17°44'36"	0.785	1.18294
7/ 8/2024	6:57	21:20	8h46m54s	19°18'12"	22°37'25"	0.668	1.07772
7/15/2024	7:21	21:15	9h25m15s	15°33'45"	25°44'48"	0.560	0.96874
7/22/2024	7:36	21:01	9h54m08s	11°49'05"	26°56'00"	0.453	0.86194
7/29/2024	7:37	20:38	10h12m37s	8°35'15"	25°43'18"	0.336	0.76174
8/ 5/2024	7:21	20:08	10h18m27s	6°30'17"	21°20'17"	0.205	0.67547
8/12/2024	6:43	19:30	10h09m27s	6°19'49"	13°08'22"	0.076	0.61831
8/19/2024	5:47	18:50	9h49m18s	8°22'53"	4°31'03"	0.010	0.61581
8/26/2024	4:54	18:20	9h33m24s	11°25'13"	11°40'51"	0.088	0.69202
9/ 2/2024	4:28	18:07	9h38m38s	13°13'46"	17°27'59"	0.319	0.84500
9/ 9/2024	4:35	18:07	10h08m08s	12°26'17"	17°13'45"	0.622	1.03699
9/16/2024	5:05	18:12	10h52m23s	9°02'45"	12°46'38"	0.859	1.21042
9/23/2024	5:43	18:14	11h40m16s	4°05'06"	6°50'50"	0.971	1.32947
9/30/2024	6:20	18:14	12h26m32s	-1°22'26"	1°32'13"	0.999	1.39441
10/ 7/2024	6:55	18:11	13h10m27s	-6°43'16"	4°37'57"	0.991	1.41786
10/14/2024	7:27	18:09	13h52m44s	-11°40'00"	9°10'40"	0.968	1.40980
10/21/2024	7:57	18:06	14h34m13s	-16°03'18"	13°12'46"	0.936	1.37551
10/28/2024	8:25	18:06	15h15m25s	-19°46'08"	16°44'32"	0.894	1.31671
11/ 4/2024	8:50	18:07	15h56m15s	-22°41'02"	19°43'12"	0.833	1.23271
11/11/2024	9:09	18:10	16h35m22s	-24°39'10"	21°53'20"	0.741	1.12168
11/18/2024	9:17	18:12	17h08m50s	-25°30'19"	22°27'56"	0.591	0.98347
11/25/2024	9:03	18:02	17h27m12s	-25°02'52"	19°26'50"	0.351	0.82855
12/ 2/2024	8:11	17:27	17h14m49s	-23°00'37"	9°19'07"	0.069	0.70243
12/ 9/2024	6:53	16:35	16h37m23s	-19°52'45"	7°07'45"	0.041	0.69315
12/16/2024	6:07	15:59	16h20m11s	-18°33'39"	18°20'27"	0.316	0.81194
12/23/2024	6:00	15:43	16h34m17s	-19°37'54"	21°54'20"	0.578	0.97020
12/30/2024	6:12	15:41	17h05m37s	-21°27'09"	21°27'43"	0.741	1.11264

Venus

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
1/ 1/2024	4:54	14:45	16h03m49s	-18°46'22"	37°28'02"	0.779	1.18202
1/ 8/2024	5:09	14:47	16h39m23s	-20°24'59"	36°03'33"	0.798	1.22530
1/15/2024	5:23	14:51	17h15m46s	-21°36'43"	34°36'46"	0.817	1.26708
1/22/2024	5:35	14:58	17h52m45s	-22°18'33"	33°07'58"	0.834	1.30738
1/29/2024	5:45	15:07	18h30m04s	-22°28'30"	31°37'15"	0.851	1.34622
2/ 5/2024	5:53	15:19	19h07m24s	-22°05'42"	30°04'57"	0.866	1.38354
2/12/2024	5:58	15:32	19h44m27s	-21°10'32"	28°31'17"	0.880	1.41926
2/19/2024	6:01	15:47	20h20m56s	-19°44'36"	26°56'16"	0.894	1.45337
2/26/2024	6:02	16:03	20h56m40s	-17°50'29"	25°19'50"	0.906	1.48591
3/ 4/2024	6:00	16:19	21h31m33s	-15°31'23"	23°42'02"	0.918	1.51684

3/11/2024	5:56	16:35	22h05m35s	-12°51'04"	22°03'00"	0.929	1.54604
3/18/2024	5:51	16:52	22h38m49s	-9°53'33"	20°22'39"	0.940	1.57345
3/25/2024	5:45	17:08	23h11m23s	-6°42'57"	18°40'49"	0.949	1.59906
4/ 1/2024	5:38	17:24	23h43m27s	-3°23'20"	16°57'32"	0.958	1.62284
4/ 8/2024	5:31	17:40	0h15m16s	0°01'19"	15°12'54"	0.966	1.64462
4/15/2024	5:23	17:56	0h47m01s	3°26'55"	13°26'51"	0.974	1.66428
4/22/2024	5:16	18:12	1h18m56s	6°49'23"	11°39'18"	0.980	1.68176
4/29/2024	5:09	18:28	1h51m14s	10°04'43"	9°50'18"	0.986	1.69700
5/ 6/2024	5:03	18:44	2h24m09s	13°08'51"	8°00'01"	0.991	1.70986
5/13/2024	4:59	19:01	2h57m50s	15°57'35"	6°08'30"	0.994	1.72017
5/20/2024	4:56	19:18	3h32m22s	18°26'42"	4°15'46"	0.997	1.72785
5/27/2024	4:56	19:34	4h07m49s	20°32'09"	2°21'57"	0.999	1.73288
6/ 3/2024	4:58	19:50	4h44m07s	22°10'14"	0°27'28"	1.000	1.73517
6/10/2024	5:02	20:04	5h21m08s	23°17'39"	1°28'10"	1.000	1.73458
6/17/2024	5:10	20:16	5h58m37s	23°52'00"	3°24'02"	0.998	1.73108
6/24/2024	5:20	20:25	6h36m15s	23°51'54"	5°20'20"	0.996	1.72470
7/ 1/2024	5:33	20:32	7h13m43s	23°17'11"	7°16'41"	0.992	1.71548
7/ 8/2024	5:47	20:36	7h50m42s	22°08'53"	9°12'52"	0.987	1.70337
7/15/2024	6:03	20:37	8h26m57s	20°29'10"	11°08'45"	0.981	1.68840
7/22/2024	6:19	20:36	9h02m17s	18°21'03"	13°04'09"	0.974	1.67068
7/29/2024	6:36	20:32	9h36m39s	15°48'10"	14°58'44"	0.966	1.65036
8/ 5/2024	6:53	20:27	10h10m04s	12°54'25"	16°52'16"	0.956	1.62751
8/12/2024	7:09	20:20	10h42m39s	9°43'59"	18°44'38"	0.946	1.60219
8/19/2024	7:26	20:13	11h14m32s	6°21'03"	20°35'44"	0.935	1.57455
8/26/2024	7:42	20:04	11h45m56s	2°49'44"	22°25'16"	0.923	1.54480
9/ 2/2024	7:58	19:55	12h17m05s	-0°45'58"	24°13'00"	0.910	1.51307
9/ 9/2024	8:13	19:47	12h48m13s	-4°21'59"	25°58'54"	0.896	1.47941
9/16/2024	8:29	19:38	13h19m34s	-7°54'11"	27°42'55"	0.882	1.44396
9/23/2024	8:46	19:31	13h51m21s	-11°18'25"	29°24'47"	0.867	1.40691
9/30/2024	9:02	19:24	14h23m48s	-14°30'32"	31°04'15"	0.851	1.36840
10/ 7/2024	9:19	19:19	14h57m05s	-17°26'12"	32°41'18"	0.835	1.32845
10/14/2024	9:36	19:15	15h31m16s	-20°01'02"	34°15'51"	0.818	1.28712
10/21/2024	9:52	19:14	16h06m23s	-22°10'47"	35°47'34"	0.800	1.24457
10/28/2024	10:08	19:16	16h42m22s	-23°51'35"	37°16'05"	0.782	1.20090
11/ 4/2024	10:22	19:21	17h18m59s	-25°00'11"	38°41'13"	0.762	1.15614
11/11/2024	10:33	19:28	17h55m58s	-25°34'11"	40°02'45"	0.742	1.11028
11/18/2024	10:42	19:38	18h32m53s	-25°32'26"	41°20'03"	0.721	1.06343
11/25/2024	10:48	19:50	19h09m20s	-24°55'12"	42°32'24"	0.698	1.01571
12/ 2/2024	10:50	20:03	19h44m57s	-23°44'00"	43°39'10"	0.675	0.96714
12/ 9/2024	10:50	20:17	20h19m23s	-22°01'36"	44°39'35"	0.650	0.91772
12/16/2024	10:46	20:32	20h52m22s	-19°51'43"	45°32'23"	0.623	0.86755
12/23/2024	10:39	20:45	21h23m45s	-17°18'40"	46°15'48"	0.594	0.81678
12/30/2024	10:30	20:58	21h53m26s	-14°26'59"	46°48'00"	0.564	0.76553

Mars

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
1/ 1/2024	6:59	16:07	17h48m14s	-23°57'50"	12°44'18"	0.995	2.42380
1/ 8/2024	6:54	16:02	18h11m03s	-24°02'05"	14°39'58"	0.993	2.40191
1/15/2024	6:49	15:58	18h34m00s	-23°53'47"	16°33'31"	0.991	2.37883
1/22/2024	6:43	15:55	18h57m00s	-23°32'50"	18°24'42"	0.988	2.35477
1/29/2024	6:36	15:53	19h19m58s	-22°59'18"	20°13'24"	0.986	2.32993
2/ 5/2024	6:28	15:52	19h42m51s	-22°13'27"	21°59'42"	0.983	2.30445
2/12/2024	6:19	15:51	20h05m33s	-21°15'43"	23°43'38"	0.980	2.27838
2/19/2024	6:09	15:51	20h28m03s	-20°06'42"	25°25'04"	0.977	2.25188
2/26/2024	5:58	15:50	20h50m15s	-18°47'10"	27°03'56"	0.974	2.22513
3/ 4/2024	5:47	15:51	21h12m11s	-17°17'57"	28°40'26"	0.971	2.19825
3/11/2024	5:34	15:51	21h33m48s	-15°39'58"	30°14'46"	0.967	2.17125

Midway, UT (JMC) Latitude: 40°30'43" N Longitude: 111°28'40" W
 Local Time = UT - 7.00 hours Elevation: 1706 meters Year 2024
 Page 17

3/18/2024	5:22	15:51	21h55m06s	-13°54'19"	31°47'00"	0.964	2.14419
3/25/2024	5:08	15:51	22h16m05s	-12°02'03"	33°17'10"	0.960	2.11722
4/ 1/2024	4:54	15:51	22h36m47s	-10°04'13"	34°45'32"	0.956	2.09040
4/ 8/2024	4:40	15:52	22h57m15s	-8°01'57"	36°12'31"	0.952	2.06366
4/15/2024	4:25	15:51	23h17m28s	-5°56'23"	37°38'22"	0.948	2.03701
4/22/2024	4:10	15:51	23h37m30s	-3°48'40"	39°03'12"	0.945	2.01050
4/29/2024	3:55	15:51	23h57m22s	-1°39'50"	40°27'22"	0.941	1.98413
5/ 6/2024	3:40	15:50	0h17m09s	0°29'03"	41°51'22"	0.937	1.95779
5/13/2024	3:25	15:50	0h36m50s	2°36'55"	43°15'38"	0.933	1.93139
5/20/2024	3:10	15:49	0h56m30s	4°42'41"	44°40'21"	0.929	1.90490
5/27/2024	2:55	15:48	1h16m09s	6°45'27"	46°05'51"	0.925	1.87831
6/ 3/2024	2:40	15:47	1h35m50s	8°44'16"	47°32'44"	0.921	1.85143
6/10/2024	2:25	15:46	1h55m33s	10°38'12"	49°01'30"	0.917	1.82412
6/17/2024	2:11	15:45	2h15m21s	12°26'23"	50°32'25"	0.913	1.79632
6/24/2024	1:57	15:43	2h35m12s	14°08'04"	52°05'46"	0.909	1.76796
7/ 1/2024	1:43	15:41	2h55m09s	15°42'34"	53°42'09"	0.906	1.73888
7/ 8/2024	1:30	15:39	3h15m09s	17°09'14"	55°22'09"	0.902	1.70889
7/15/2024	1:18	15:37	3h35m10s	18°27'28"	57°06'08"	0.898	1.67791
7/22/2024	1:05	15:34	3h55m13s	19°36'55"	58°54'20"	0.895	1.64589
7/29/2024	0:54	15:30	4h15m13s	20°37'15"	60°47'20"	0.892	1.61269
8/ 5/2024	0:42	15:26	4h35m08s	21°28'19"	62°45'51"	0.889	1.57813
8/12/2024	0:32	15:21	4h54m53s	22°10'03"	64°50'21"	0.886	1.54215
8/19/2024	0:21	15:15	5h14m25s	22°42'34"	67°01'11"	0.883	1.50474
8/26/2024	0:11	15:09	5h33m40s	23°06'11"	69°18'55"	0.880	1.46583
9/ 2/2024	0:01	15:01	5h52m32s	23°21'17"	71°44'30"	0.878	1.42528
9/ 9/2024	23:50	14:52	6h10m56s	23°28'27"	74°18'42"	0.877	1.38310
9/16/2024	23:41	14:42	6h28m46s	23°28'26"	77°02'05"	0.875	1.33937
9/23/2024	23:31	14:31	6h45m59s	23°22'05"	79°55'30"	0.875	1.29411
9/30/2024	23:20	14:19	7h02m27s	23°10'26"	83°00'18"	0.875	1.24732
10/ 7/2024	23:09	14:06	7h18m05s	22°54'38"	86°17'54"	0.876	1.19911
10/14/2024	22:58	13:51	7h32m46s	22°35'59"	89°49'32"	0.877	1.14974
10/21/2024	22:45	13:36	7h46m23s	22°15'51"	93°36'43"	0.880	1.09941
10/28/2024	22:31	13:19	7h58m48s	21°55'47"	97°41'46"	0.884	1.04835
11/ 4/2024	22:15	13:01	8h09m51s	21°37'28"	102°07'25"	0.890	0.99691
11/11/2024	21:58	12:42	8h19m20s	21°22'42"	106°56'18"	0.897	0.94566
11/18/2024	21:38	12:21	8h27m05s	21°13'12"	112°11'18"	0.905	0.89522
11/25/2024	21:16	11:59	8h32m49s	21°10'49"	117°56'15"	0.916	0.84622
12/ 2/2024	20:51	11:35	8h36m17s	21°17'14"	124°15'25"	0.928	0.79959
12/ 9/2024	20:23	11:10	8h37m12s	21°33'39"	131°12'09"	0.942	0.75652
12/16/2024	19:51	10:42	8h35m21s	22°00'22"	138°48'20"	0.957	0.71831
12/23/2024	19:16	10:12	8h30m38s	22°36'32"	147°04'20"	0.971	0.68630
12/30/2024	18:37	9:40	8h23m07s	23°19'46"	155°56'34"	0.984	0.66203

Jupiter

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
1/ 1/2024	13:11	2:44	2h14m36s	12°15'16"	115°29'35"	0.992	4.48027
1/ 8/2024	12:43	2:17	2h14m58s	12°19'25"	108°28'05"	0.991	4.58496
1/15/2024	12:16	1:51	2h15m59s	12°26'53"	101°36'35"	0.991	4.69394
1/22/2024	11:50	1:26	2h17m38s	12°37'27"	94°55'15"	0.990	4.80552
1/29/2024	11:24	1:02	2h19m52s	12°50'53"	88°23'42"	0.990	4.91816
2/ 5/2024	10:58	0:38	2h22m39s	13°06'55"	82°01'16"	0.990	5.03051
2/12/2024	10:33	0:15	2h25m58s	13°25'16"	75°47'30"	0.991	5.14125
2/19/2024	10:08	23:49	2h29m46s	13°45'38"	69°42'11"	0.991	5.24907
2/26/2024	9:43	23:27	2h34m00s	14°07'42"	63°44'47"	0.992	5.35287
3/ 4/2024	9:19	23:06	2h38m38s	14°31'09"	57°54'32"	0.993	5.45172
3/11/2024	8:55	22:45	2h43m38s	14°55'43"	52°10'49"	0.994	5.54475
3/18/2024	8:31	22:25	2h48m57s	15°21'06"	46°33'19"	0.995	5.63109

3/25/2024	8:07	22:04	2h54m34s	15°47'03"	41°01'36"	0.996	5.71005
4/ 1/2024	7:44	21:44	3h00m26s	16°13'17"	35°34'58"	0.997	5.78114
4/ 8/2024	7:21	21:25	3h06m31s	16°39'36"	30°12'45"	0.997	5.84387
4/15/2024	6:58	21:05	3h12m48s	17°05'46"	24°54'36"	0.998	5.89773
4/22/2024	6:35	20:46	3h19m14s	17°31'34"	19°40'12"	0.999	5.94241
4/29/2024	6:13	20:26	3h25m49s	17°56'51"	14°28'59"	0.999	5.97775
5/ 6/2024	5:50	20:07	3h32m29s	18°21'27"	9°20'26"	1.000	6.00355
5/13/2024	5:28	19:48	3h39m14s	18°45'12"	4°15'16"	1.000	6.01961
5/20/2024	5:06	19:29	3h46m02s	19°07'59"	1°09'41"	1.000	6.02590
5/27/2024	4:43	19:09	3h52m52s	19°29'41"	6°01'27"	1.000	6.02252
6/ 3/2024	4:21	18:50	3h59m40s	19°50'14"	11°04'33"	1.000	6.00953
6/10/2024	3:59	18:31	4h06m27s	20°09'31"	16°08'41"	0.999	5.98697
6/17/2024	3:37	18:11	4h13m10s	20°27'30"	21°13'38"	0.999	5.95503
6/24/2024	3:15	17:51	4h19m47s	20°44'08"	26°19'50"	0.998	5.91406
7/ 1/2024	2:53	17:31	4h26m16s	20°59'24"	31°28'00"	0.997	5.86434
7/ 8/2024	2:31	17:11	4h32m36s	21°13'16"	36°38'50"	0.996	5.80614
7/15/2024	2:08	16:50	4h38m44s	21°25'46"	41°52'46"	0.995	5.73990
7/22/2024	1:46	16:29	4h44m38s	21°36'53"	47°10'18"	0.994	5.66621
7/29/2024	1:23	16:08	4h50m16s	21°46'41"	52°32'16"	0.994	5.58560
8/ 5/2024	1:00	15:46	4h55m36s	21°55'13"	57°59'33"	0.993	5.49861
8/12/2024	0:37	15:24	5h00m34s	22°02'31"	63°32'43"	0.992	5.40600
8/19/2024	0:14	15:02	5h05m09s	22°08'41"	69°12'16"	0.991	5.30863
8/26/2024	23:47	14:38	5h09m18s	22°13'47"	74°59'05"	0.991	5.20739
9/ 2/2024	23:22	14:15	5h12m57s	22°17'54"	80°54'08"	0.990	5.10315
9/ 9/2024	22:58	13:51	5h16m04s	22°21'07"	86°58'05"	0.990	4.99706
9/16/2024	22:32	13:26	5h18m37s	22°23'31"	93°11'23"	0.990	4.89037
9/23/2024	22:07	13:00	5h20m33s	22°25'12"	99°34'43"	0.990	4.78436
9/30/2024	21:40	12:34	5h21m49s	22°26'12"	106°08'56"	0.991	4.68034
10/ 7/2024	21:13	12:07	5h22m24s	22°26'34"	112°54'31"	0.992	4.57983
10/14/2024	20:45	11:39	5h22m17s	22°26'21"	119°51'25"	0.993	4.48448
10/21/2024	20:17	11:11	5h21m27s	22°25'32"	126°59'39"	0.994	4.39586
10/28/2024	19:48	10:41	5h19m56s	22°24'08"	134°19'17"	0.995	4.31553
11/ 4/2024	19:18	10:11	5h17m44s	22°22'07"	141°49'54"	0.996	4.24512
11/11/2024	18:48	9:41	5h14m57s	22°19'28"	149°30'14"	0.998	4.18623
11/18/2024	18:17	9:10	5h11m39s	22°16'11"	157°18'49"	0.999	4.14015
11/25/2024	17:46	8:38	5h07m56s	22°12'18"	165°14'11"	0.999	4.10795
12/ 2/2024	17:15	8:06	5h03m58s	22°07'53"	173°13'57"	1.000	4.09056
12/ 9/2024	16:44	7:35	4h59m52s	22°03'05"	178°31'02"	1.000	4.08856
12/16/2024	16:13	7:03	4h55m49s	21°58'06"	170°35'40"	1.000	4.10203
12/23/2024	15:42	6:31	4h51m57s	21°53'10"	162°34'49"	0.999	4.13069
12/30/2024	15:11	6:00	4h48m24s	21°48'33"	154°37'32"	0.998	4.17403

Saturn

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
1/ 1/2024	10:44	21:26	22h23m23s	-11°49'06"	53°17'18"	0.998	10.31563
1/ 8/2024	10:18	21:02	22h25m49s	-11°34'36"	46°48'08"	0.999	10.40450
1/15/2024	9:52	20:38	22h28m27s	-11°19'01"	40°22'00"	0.999	10.48439
1/22/2024	9:27	20:15	22h31m14s	-11°02'31"	33°59'01"	0.999	10.55430
1/29/2024	9:01	19:51	22h34m09s	-10°45'14"	27°39'00"	0.999	10.61349
2/ 5/2024	8:35	19:28	22h37m11s	-10°27'18"	21°21'42"	1.000	10.66137
2/12/2024	8:10	19:04	22h40m18s	-10°08'51"	15°07'13"	1.000	10.69735
2/19/2024	7:44	18:41	22h43m28s	-9°50'03"	8°57'01"	1.000	10.72102
2/26/2024	7:19	18:18	22h46m40s	-9°31'04"	3°04'07"	1.000	10.73225
3/ 4/2024	6:53	17:55	22h49m53s	-9°12'02"	3°55'19"	1.000	10.73099
3/11/2024	6:28	17:31	22h53m04s	-8°53'05"	9°51'35"	1.000	10.71723
3/18/2024	6:03	17:08	22h56m14s	-8°34'23"	15°56'48"	1.000	10.69113
3/25/2024	5:37	16:45	22h59m19s	-8°16'06"	22°02'55"	1.000	10.65308

Midway, UT (JMC) Latitude: 40°30'43" N Longitude: 111°28'40" W
 Local Time = UT - 7.00 hours Elevation: 1706 meters Year 2024
 Page 19

4/ 1/2024	5:11	16:21	23h02m19s	-7°58'23"	28°09'20"	0.999	10.60357
4/ 8/2024	4:46	15:57	23h05m13s	-7°41'21"	34°16'15"	0.999	10.54309
4/15/2024	4:20	15:34	23h07m59s	-7°25'10"	40°23'48"	0.999	10.47229
4/22/2024	3:54	15:10	23h10m36s	-7°10'00"	46°32'05"	0.999	10.39204
4/29/2024	3:28	14:45	23h13m03s	-6°55'58"	52°41'35"	0.998	10.30327
5/ 6/2024	3:02	14:21	23h15m19s	-6°43'11"	58°52'55"	0.998	10.20688
5/13/2024	2:36	13:56	23h17m21s	-6°31'49"	65°06'27"	0.998	10.10394
5/20/2024	2:10	13:31	23h19m10s	-6°21'58"	71°22'20"	0.998	9.99571
5/27/2024	1:43	13:05	23h20m44s	-6°13'45"	77°41'00"	0.997	9.88347
6/ 3/2024	1:17	12:39	23h22m02s	-6°07'15"	84°03'05"	0.997	9.76846
6/10/2024	0:50	12:13	23h23m04s	-6°02'33"	90°29'01"	0.997	9.65207
6/17/2024	0:23	11:46	23h23m49s	-5°59'44"	96°58'51"	0.997	9.53583
6/24/2024	23:52	11:19	23h24m15s	-5°58'49"	103°32'50"	0.997	9.42127
7/ 1/2024	23:25	10:52	23h24m24s	-5°59'48"	110°11'27"	0.998	9.30981
7/ 8/2024	22:57	10:24	23h24m15s	-6°02'42"	116°54'59"	0.998	9.20300
7/15/2024	22:29	9:55	23h23m48s	-6°07'27"	123°43'18"	0.998	9.10245
7/22/2024	22:02	9:27	23h23m04s	-6°13'56"	130°36'11"	0.998	9.00966
7/29/2024	21:33	8:58	23h22m03s	-6°22'02"	137°33'47"	0.999	8.92597
8/ 5/2024	21:05	8:28	23h20m48s	-6°31'35"	144°35'59"	0.999	8.85274
8/12/2024	20:37	7:59	23h19m19s	-6°42'22"	151°42'08"	0.999	8.79128
8/19/2024	20:08	7:29	23h17m39s	-6°54'07"	158°51'15"	1.000	8.74261
8/26/2024	19:40	6:59	23h15m50s	-7°06'34"	166°01'51"	1.000	8.70754
9/ 2/2024	19:11	6:29	23h13m55s	-7°19'24"	173°07'49"	1.000	8.68673
9/ 9/2024	18:42	5:58	23h11m57s	-7°32'19"	177°39'39"	1.000	8.68068
9/16/2024	18:14	5:28	23h09m59s	-7°44'57"	171°33'27"	1.000	8.68952
9/23/2024	17:45	4:58	23h08m04s	-7°57'00"	164°20'36"	1.000	8.71304
9/30/2024	17:16	4:28	23h06m14s	-8°08'09"	157°02'31"	1.000	8.75091
10/ 7/2024	16:48	3:58	23h04m34s	-8°18'09"	149°43'43"	0.999	8.80256
10/14/2024	16:19	3:29	23h03m05s	-8°26'43"	142°26'01"	0.999	8.86707
10/21/2024	15:51	3:00	23h01m50s	-8°33'40"	135°10'15"	0.999	8.94325
10/28/2024	15:22	2:31	23h00m50s	-8°38'50"	127°56'48"	0.998	9.02987
11/ 4/2024	14:54	2:03	23h00m08s	-8°42'07"	120°46'11"	0.998	9.12556
11/11/2024	14:27	1:35	22h59m44s	-8°43'24"	113°39'03"	0.998	9.22868
11/18/2024	13:59	1:07	22h59m39s	-8°42'40"	106°35'46"	0.998	9.33752
11/25/2024	13:32	0:40	22h59m53s	-8°39'55"	99°36'16"	0.997	9.45046
12/ 2/2024	13:04	0:13	23h00m26s	-8°35'11"	92°40'37"	0.997	9.56582
12/ 9/2024	12:37	23:43	23h01m19s	-8°28'31"	85°49'07"	0.997	9.68184
12/16/2024	12:11	23:18	23h02m30s	-8°20'00"	79°01'55"	0.997	9.79679
12/23/2024	11:44	22:52	23h03m58s	-8°09'44"	72°18'46"	0.998	9.90916
12/30/2024	11:17	22:27	23h05m42s	-7°57'50"	65°39'26"	0.998	10.01747

Uranus

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
1/ 1/2024	13:45	3:56	3h08m03s	17°16'48"	129°19'37"	1.000	18.97753
1/ 8/2024	13:17	3:28	3h07m30s	17°14'45"	122°03'29"	1.000	19.07468
1/15/2024	12:49	3:00	3h07m07s	17°13'22"	114°49'42"	0.999	19.17988
1/22/2024	12:22	2:32	3h06m54s	17°12'39"	107°38'53"	0.999	19.29133
1/29/2024	11:54	2:05	3h06m51s	17°12'38"	100°31'18"	0.999	19.40723
2/ 5/2024	11:27	1:38	3h06m58s	17°13'19"	93°26'56"	0.999	19.52585
2/12/2024	10:59	1:10	3h07m16s	17°14'43"	86°25'55"	0.999	19.64541
2/19/2024	10:32	0:44	3h07m45s	17°16'47"	79°28'37"	0.999	19.76403
2/26/2024	10:05	0:17	3h08m23s	17°19'30"	72°35'11"	0.999	19.87997
3/ 4/2024	9:38	23:47	3h09m10s	17°22'50"	65°45'22"	0.999	19.99168
3/11/2024	9:11	23:20	3h10m06s	17°26'44"	58°59'02"	1.000	20.09764
3/18/2024	8:45	22:54	3h11m11s	17°31'09"	52°16'18"	1.000	20.19634
3/25/2024	8:18	22:28	3h12m22s	17°36'01"	45°37'12"	1.000	20.28650
4/ 1/2024	7:51	22:02	3h13m40s	17°41'16"	39°01'21"	1.000	20.36708

4/ 8/2024	7:25	21:36	3h15m05s	17°46'51"	32°28'23"	1.000	20.43709
4/15/2024	6:58	21:11	3h16m34s	17°52'41"	25°58'13"	1.000	20.49562
4/22/2024	6:32	20:45	3h18m06s	17°58'42"	19°30'47"	1.000	20.54201
4/29/2024	6:06	20:20	3h19m42s	18°04'51"	13°05'43"	1.000	20.57584
5/ 6/2024	5:39	19:54	3h21m20s	18°11'05"	6°42'30"	1.000	20.59676
5/13/2024	5:13	19:29	3h23m00s	18°17'18"	0°25'45"	1.000	20.60447
5/20/2024	4:47	19:03	3h24m39s	18°23'27"	6°00'25"	1.000	20.59895
5/27/2024	4:21	18:38	3h26m17s	18°29'29"	12°19'39"	1.000	20.58041
6/ 3/2024	3:54	18:12	3h27m54s	18°35'21"	18°38'37"	1.000	20.54907
6/10/2024	3:28	17:47	3h29m29s	18°41'00"	24°57'37"	1.000	20.50525
6/17/2024	3:02	17:21	3h31m00s	18°46'23"	31°16'46"	1.000	20.44951
6/24/2024	2:35	16:55	3h32m26s	18°51'27"	37°36'23"	1.000	20.38260
7/ 1/2024	2:09	16:29	3h33m47s	18°56'09"	43°57'06"	1.000	20.30528
7/ 8/2024	1:42	16:03	3h35m03s	19°00'28"	50°19'23"	1.000	20.21840
7/15/2024	1:15	15:37	3h36m11s	19°04'21"	56°43'23"	1.000	20.12304
7/22/2024	0:49	15:11	3h37m12s	19°07'46"	63°09'19"	0.999	20.02042
7/29/2024	0:22	14:44	3h38m04s	19°10'42"	69°37'43"	0.999	19.91177
8/ 5/2024	23:51	14:18	3h38m48s	19°13'07"	76°09'04"	0.999	19.79835
8/12/2024	23:24	13:51	3h39m23s	19°15'00"	82°43'30"	0.999	19.68167
8/19/2024	22:57	13:24	3h39m47s	19°16'21"	89°21'02"	0.999	19.56331
8/26/2024	22:29	12:57	3h40m02s	19°17'08"	96°02'03"	0.999	19.44480
9/ 2/2024	22:02	12:29	3h40m07s	19°17'21"	102°46'58"	0.999	19.32770
9/ 9/2024	21:34	12:02	3h40m01s	19°17'01"	109°35'47"	0.999	19.21370
9/16/2024	21:06	11:34	3h39m46s	19°16'07"	116°28'18"	0.999	19.10453
9/23/2024	20:39	11:06	3h39m20s	19°14'41"	123°24'37"	1.000	19.00176
9/30/2024	20:11	10:37	3h38m46s	19°12'45"	130°24'57"	1.000	18.90689
10/ 7/2024	19:42	10:09	3h38m02s	19°10'18"	137°29'09"	1.000	18.82150
10/14/2024	19:14	9:40	3h37m11s	19°07'26"	144°36'45"	1.000	18.74704
10/21/2024	18:46	9:12	3h36m13s	19°04'11"	151°47'29"	1.000	18.68467
10/28/2024	18:18	8:43	3h35m10s	19°00'36"	159°01'20"	1.000	18.63542
11/ 4/2024	17:49	8:14	3h34m02s	18°56'45"	166°17'57"	1.000	18.60026
11/11/2024	17:21	7:45	3h32m52s	18°52'43"	173°36'31"	1.000	18.57986
11/18/2024	16:52	7:16	3h31m40s	18°48'36"	179°00'45"	1.000	18.57456
11/25/2024	16:24	6:47	3h30m29s	18°44'29"	171°41'05"	1.000	18.58446
12/ 2/2024	15:56	6:18	3h29m19s	18°40'26"	164°18'45"	1.000	18.60951
12/ 9/2024	15:27	5:49	3h28m12s	18°36'35"	156°56'15"	1.000	18.64936
12/16/2024	14:59	5:20	3h27m11s	18°32'59"	149°34'20"	1.000	18.70326
12/23/2024	14:31	4:52	3h26m15s	18°29'45"	142°13'18"	1.000	18.77028
12/30/2024	14:03	4:23	3h25m27s	18°26'57"	134°53'30"	1.000	18.84939

Neptune

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
1/ 1/2024	11:34	23:17	23h43m55s	-3°05'22"	75°02'36"	1.000	30.14253
1/ 8/2024	11:07	22:50	23h44m20s	-3°02'25"	68°01'33"	1.000	30.25772
1/15/2024	10:39	22:23	23h44m51s	-2°58'52"	61°02'01"	1.000	30.36747
1/22/2024	10:12	21:56	23h45m27s	-2°54'47"	54°04'24"	1.000	30.47010
1/29/2024	9:45	21:30	23h46m07s	-2°50'11"	47°08'47"	1.000	30.56422
2/ 5/2024	9:18	21:03	23h46m52s	-2°45'10"	40°14'59"	1.000	30.64859
2/12/2024	8:51	20:37	23h47m41s	-2°39'45"	33°23'02"	1.000	30.72201
2/19/2024	8:24	20:11	23h48m33s	-2°34'01"	26°33'15"	1.000	30.78343
2/26/2024	7:57	19:44	23h49m28s	-2°28'03"	19°45'48"	1.000	30.83212
3/ 4/2024	7:30	19:18	23h50m24s	-2°21'54"	13°00'47"	1.000	30.86754
3/11/2024	7:03	18:52	23h51m22s	-2°15'38"	6°19'54"	1.000	30.88923
3/18/2024	6:36	18:26	23h52m21s	-2°09'20"	1°18'55"	1.000	30.89691
3/25/2024	6:09	18:00	23h53m19s	-2°03'05"	7°17'06"	1.000	30.89062
4/ 1/2024	5:42	17:33	23h54m17s	-1°56'55"	13°53'41"	1.000	30.87059
4/ 8/2024	5:16	17:07	23h55m14s	-1°50'55"	20°31'02"	1.000	30.83708

4/15/2024	4:49	16:41	23h56m09s	-1°45'10"	27°07'49"	1.000	30.79055
4/22/2024	4:22	16:14	23h57m01s	-1°39'43"	33°43'41"	1.000	30.73176
4/29/2024	3:55	15:48	23h57m50s	-1°34'36"	40°18'53"	1.000	30.66159
5/ 6/2024	3:28	15:21	23h58m36s	-1°29'54"	46°53'48"	1.000	30.58092
5/13/2024	3:01	14:55	23h59m18s	-1°25'40"	53°28'36"	1.000	30.49080
5/20/2024	2:33	14:28	23h59m55s	-1°21'56"	60°03'14"	1.000	30.39254
5/27/2024	2:06	14:01	0h00m28s	-1°18'45"	66°37'59"	1.000	30.28749
6/ 3/2024	1:39	13:34	0h00m55s	-1°16'08"	73°13'19"	1.000	30.17696
6/10/2024	1:12	13:07	0h01m17s	-1°14'07"	79°49'29"	1.000	30.06240
6/17/2024	0:44	12:40	0h01m33s	-1°12'44"	86°26'26"	1.000	29.94544
6/24/2024	0:17	12:13	0h01m44s	-1°11'58"	93°04'20"	1.000	29.82768
7/ 1/2024	23:46	11:45	0h01m49s	-1°11'51"	99°43'38"	1.000	29.71063
7/ 8/2024	23:18	11:18	0h01m48s	-1°12'22"	106°24'37"	1.000	29.59588
7/15/2024	22:51	10:50	0h01m41s	-1°13'30"	113°07'11"	1.000	29.48512
7/22/2024	22:23	10:22	0h01m28s	-1°15'14"	119°51'19"	1.000	29.37991
7/29/2024	21:55	9:54	0h01m10s	-1°17'31"	126°37'22"	1.000	29.28168
8/ 5/2024	21:27	9:26	0h00m47s	-1°20'20"	133°25'34"	1.000	29.19185
8/12/2024	21:00	8:58	0h00m19s	-1°23'38"	140°15'46"	1.000	29.11185
8/19/2024	20:32	8:30	23h59m48s	-1°27'20"	147°07'44"	1.000	29.04290
8/26/2024	20:04	8:01	23h59m12s	-1°31'23"	154°01'33"	1.000	28.98597
9/ 2/2024	19:36	7:33	23h58m34s	-1°35'43"	160°57'16"	1.000	28.94198
9/ 9/2024	19:08	7:05	23h57m54s	-1°40'16"	167°54'07"	1.000	28.91176
9/16/2024	18:40	6:36	23h57m12s	-1°44'54"	174°48'16"	1.000	28.89584
9/23/2024	18:12	6:08	23h56m29s	-1°49'34"	177°35'47"	1.000	28.89443
9/30/2024	17:44	5:39	23h55m47s	-1°54'11"	170°50'31"	1.000	28.90768
10/ 7/2024	17:16	5:11	23h55m06s	-1°58'39"	163°48'10"	1.000	28.93555
10/14/2024	16:48	4:42	23h54m26s	-2°02'53"	156°43'16"	1.000	28.97764
10/21/2024	16:20	4:14	23h53m49s	-2°06'47"	149°37'06"	1.000	29.03329
10/28/2024	15:52	3:46	23h53m15s	-2°10'18"	142°29'54"	1.000	29.10174
11/ 4/2024	15:25	3:17	23h52m45s	-2°13'21"	135°21'57"	1.000	29.18205
11/11/2024	14:57	2:49	23h52m20s	-2°15'52"	128°13'49"	1.000	29.27297
11/18/2024	14:29	2:21	23h52m00s	-2°17'49"	121°05'50"	1.000	29.37304
11/25/2024	14:01	1:54	23h51m45s	-2°19'09"	113°58'00"	1.000	29.48080
12/ 2/2024	13:34	1:26	23h51m37s	-2°19'49"	106°50'27"	1.000	29.59466
12/ 9/2024	13:06	0:58	23h51m34s	-2°19'49"	99°43'40"	1.000	29.71283
12/16/2024	12:39	0:31	23h51m38s	-2°19'08"	92°38'01"	1.000	29.83345
12/23/2024	12:11	0:04	23h51m48s	-2°17'47"	85°33'29"	1.000	29.95474
12/30/2024	11:44	23:33	23h52m04s	-2°15'46"	78°30'05"	1.000	30.07496

Pluto

Date	Rise	Set	RA	Dec	Elongation	Ill Fr	DIST(AU)
1/ 1/2024	9:13	18:28	20h08m33s	-22°59'32"	19°30'24"	1.000	35.84866
1/ 8/2024	8:46	18:02	20h09m29s	-22°57'09"	12°42'15"	1.000	35.88667
1/15/2024	8:19	17:35	20h10m27s	-22°54'44"	6°09'19"	1.000	35.91057
1/22/2024	7:53	17:09	20h11m25s	-22°52'21"	3°07'35"	1.000	35.92009
1/29/2024	7:26	16:43	20h12m24s	-22°50'01"	8°45'13"	1.000	35.91526
2/ 5/2024	6:59	16:16	20h13m21s	-22°47'46"	15°25'51"	1.000	35.89627
2/12/2024	6:32	15:50	20h14m17s	-22°45'39"	22°13'29"	1.000	35.86340
2/19/2024	6:06	15:23	20h15m11s	-22°43'41"	29°02'39"	1.000	35.81720
2/26/2024	5:39	14:57	20h16m02s	-22°41'54"	35°52'00"	1.000	35.75853
3/ 4/2024	5:12	14:30	20h16m50s	-22°40'21"	42°41'17"	1.000	35.68831
3/11/2024	4:45	14:03	20h17m34s	-22°39'02"	49°30'29"	1.000	35.60754
3/18/2024	4:18	13:37	20h18m14s	-22°37'59"	56°19'16"	1.000	35.51749
3/25/2024	3:51	13:10	20h18m49s	-22°37'14"	63°07'29"	1.000	35.41959
4/ 1/2024	3:24	12:43	20h19m19s	-22°36'47"	69°55'19"	1.000	35.31530
4/ 8/2024	2:57	12:16	20h19m44s	-22°36'39"	76°43'00"	1.000	35.20608
4/15/2024	2:30	11:48	20h20m03s	-22°36'51"	83°30'26"	1.000	35.09357

4/22/2024	2:03	11:21	20h20m16s	-22°37'23"	90°17'27"	1.000	34.97953
4/29/2024	1:35	10:54	20h20m23s	-22°38'13"	97°04'14"	1.000	34.86558
5/ 6/2024	1:08	10:26	20h20m25s	-22°39'24"	103°51'05"	1.000	34.75332
5/13/2024	0:40	9:58	20h20m20s	-22°40'52"	110°38'00"	1.000	34.64445
5/20/2024	0:13	9:30	20h20m10s	-22°42'38"	117°24'45"	1.000	34.54065
5/27/2024	23:41	9:02	20h19m55s	-22°44'39"	124°11'25"	1.000	34.44339
6/ 3/2024	23:13	8:34	20h19m34s	-22°46'54"	130°58'18"	1.000	34.35406
6/10/2024	22:46	8:06	20h19m09s	-22°49'21"	137°45'22"	1.000	34.27403
6/17/2024	22:18	7:38	20h18m40s	-22°51'59"	144°32'15"	1.000	34.20459
6/24/2024	21:50	7:10	20h18m07s	-22°54'44"	151°18'40"	1.000	34.14674
7/ 1/2024	21:22	6:42	20h17m31s	-22°57'35"	158°04'18"	1.000	34.10133
7/ 8/2024	20:54	6:13	20h16m52s	-23°00'28"	164°47'31"	1.000	34.06914
7/15/2024	20:26	5:45	20h16m12s	-23°03'21"	171°20'54"	1.000	34.05079
7/22/2024	19:58	5:16	20h15m31s	-23°06'12"	176°33'46"	1.000	34.04656
7/29/2024	19:30	4:48	20h14m49s	-23°08'58"	173°29'16"	1.000	34.05654
8/ 5/2024	19:02	4:20	20h14m08s	-23°11'37"	167°04'30"	1.000	34.08076
8/12/2024	18:34	3:51	20h13m28s	-23°14'06"	160°21'05"	1.000	34.11902
8/19/2024	18:06	3:23	20h12m51s	-23°16'24"	153°33'02"	1.000	34.17078
8/26/2024	17:38	2:55	20h12m16s	-23°18'28"	146°42'52"	1.000	34.23535
9/ 2/2024	17:10	2:26	20h11m44s	-23°20'18"	139°51'16"	1.000	34.31196
9/ 9/2024	16:42	1:58	20h11m16s	-23°21'51"	132°58'44"	1.000	34.39964
9/16/2024	16:14	1:30	20h10m53s	-23°23'06"	126°05'44"	1.000	34.49711
9/23/2024	15:47	1:02	20h10m35s	-23°24'03"	119°12'16"	1.000	34.60303
9/30/2024	15:19	0:35	20h10m22s	-23°24'42"	112°18'11"	1.000	34.71602
10/ 7/2024	14:51	0:07	20h10m14s	-23°25'01"	105°23'37"	1.000	34.83455
10/14/2024	14:24	23:36	20h10m13s	-23°25'02"	98°28'52"	1.000	34.95689
10/21/2024	13:56	23:08	20h10m18s	-23°24'43"	91°33'59"	1.000	35.08130
10/28/2024	13:29	22:41	20h10m28s	-23°24'06"	84°38'45"	1.000	35.20616
11/ 4/2024	13:02	22:14	20h10m45s	-23°23'11"	77°43'13"	1.000	35.32971
11/11/2024	12:35	21:47	20h11m07s	-23°22'00"	70°47'42"	1.000	35.45015
11/18/2024	12:07	21:20	20h11m35s	-23°20'32"	63°52'20"	1.000	35.56577
11/25/2024	11:40	20:53	20h12m09s	-23°18'51"	56°56'59"	1.000	35.67506
12/ 2/2024	11:13	20:26	20h12m47s	-23°16'56"	50°01'38"	1.000	35.77649
12/ 9/2024	10:46	20:00	20h13m30s	-23°14'50"	43°06'41"	1.000	35.86856
12/16/2024	10:19	19:33	20h14m17s	-23°12'34"	36°12'28"	1.000	35.95003
12/23/2024	9:53	19:06	20h15m07s	-23°10'11"	29°19'09"	1.000	36.01987
12/30/2024	9:26	18:40	20h16m00s	-23°07'42"	22°27'15"	1.000	36.07713

Planet Apsides Report for 2024

Earth

1/ 3/2024	Perihelion	Distance from Sun:	0.98 AU
7/ 4/2024	Aphelion	Distance from Sun:	1.02 AU

Mercury

3/17/2024	Perihelion	Distance from Sun:	0.31 AU
6/13/2024	Perihelion	Distance from Sun:	0.31 AU
9/ 9/2024	Perihelion	Distance from Sun:	0.31 AU
12/ 6/2024	Perihelion	Distance from Sun:	0.31 AU
2/ 2/2024	Aphelion	Distance from Sun:	0.47 AU
4/30/2024	Aphelion	Distance from Sun:	0.47 AU
7/27/2024	Aphelion	Distance from Sun:	0.47 AU
10/23/2024	Aphelion	Distance from Sun:	0.47 AU

Venus

7/ 9/2024	Perihelion	Distance from Sun:	0.72 AU
3/19/2024	Aphelion	Distance from Sun:	0.73 AU
10/30/2024	Aphelion	Distance from Sun:	0.73 AU

Midway, UT (JMC) Latitude: 40°30'43" N Longitude: 111°28'40" W
Local Time = UT - 7.00 hours Elevation: 1706 meters Year 2024
Page 23

Mars

5/ 8/2024 Perihelion Distance from Sun: 1.38 AU

Jupiter

No Apsis

Saturn

No Apsis

Planet Conjunction/Opposition Report for 1/ 1/2024 to 12/31/2024

Mercury

Date	Hour	Event
2/28/2024	1	Superior Conjunction
4/11/2024	17	Inferior Conjunction
6/14/2024	17	Superior Conjunction
8/18/2024	19	Inferior Conjunction
9/30/2024	17	Superior Conjunction
12/ 5/2024	19	Inferior Conjunction

Venus

Date	Hour	Event
6/ 4/2024	17	Superior Conjunction (Occultation)

Mars

No Event

Jupiter

Date	Hour	Event
5/18/2024	17	Conjunction
12/ 7/2024	17	Opposition

Saturn

Date	Hour	Event
2/28/2024	17	Conjunction
9/ 7/2024	23	Opposition

Uranus

Date	Hour	Event
5/13/2024	2	Conjunction (Occultation)
11/16/2024	19	Opposition

Neptune

Date	Hour	Event
3/17/2024	4	Conjunction
9/20/2024	17	Opposition

Midway, UT (JMC) Latitude: 40°30'43" N Longitude: 111°28'40" W
 Local Time = UT - 7.00 hours Elevation: 1706 meters Year 2024
 Page 24

Pluto

Date	Hour	Event
1/20/2024	17	Conjunction
7/22/2024	23	Opposition

Planet Data Report

Planet	Mean Dist From Sun (AU)	Period of Revolution	Inclination	Equatorial Diameter (km)
Mercury	0.39	88 days	7°	4880
Venus	0.72	224.7 days	3.4°	12100
Earth	1.00	365.24 days	0°	12756
Mars	1.52	687 days	1.9°	6794
Jupiter	5.20	11.86 years	1.3°	143200
Saturn	9.54	29.46 years	2.5°	120000
Uranus	19.18	84 years	0.8°	52290
Neptune	30.06	165 years	1.8°	50450
Pluto	39.44	248 years	17.2°	2200-2300

Moon Apisides Report for 1/ 1/2024 to 12/31/2024

Date	Hour	Apisid	Distance (km)	Diameter
1/ 1/2024	8	Apogee	404914	0.4919°
1/13/2024	4	Perigee	362274	0.5497°
1/29/2024	1	Apogee	405766	0.4908°
2/10/2024	12	Perigee	358103	0.5561°
2/25/2024	8	Apogee	406311	0.4902°
3/10/2024	0	Perigee	356898	0.5580°
3/23/2024	8	Apogee	406300	0.4902°
4/ 7/2024	11	Perigee	358842	0.5550°
4/19/2024	19	Apogee	405640	0.4910°
5/ 5/2024	15	Perigee	363166	0.5484°
5/17/2024	12	Apogee	404655	0.4922°
6/ 2/2024	0	Perigee	368113	0.5410°
6/14/2024	7	Apogee	404077	0.4929°
6/27/2024	4	Perigee	369285	0.5393°
7/12/2024	1	Apogee	404364	0.4925°
7/23/2024	23	Perigee	364922	0.5458°
8/ 8/2024	19	Apogee	405302	0.4914°
8/20/2024	22	Perigee	360199	0.5529°
9/ 5/2024	8	Apogee	406208	0.4903°
9/18/2024	7	Perigee	357289	0.5574°
10/ 2/2024	13	Apogee	406523	0.4899°
10/16/2024	18	Perigee	357181	0.5576°
10/29/2024	16	Apogee	406162	0.4903°
11/14/2024	4	Perigee	360116	0.5530°
11/26/2024	5	Apogee	405292	0.4914°
12/12/2024	6	Perigee	365361	0.5451°
12/24/2024	0	Apogee	404479	0.4924°

Moon Nodes Report for 1/ 1/2024 to 12/31/2024

Date	Time	Node	Illuminated Fraction
1/ 4/2024	11:51	Descending	0.47
1/17/2024	7:04	Ascending	0.40
1/31/2024	13:16	Descending	0.73
2/13/2024	10:00	Ascending	0.17
2/27/2024	15:52	Descending	0.92
3/11/2024	18:17	Ascending	0.03
3/25/2024	21:06	Descending	1.00
4/ 8/2024	5:19	Ascending	0.00
4/22/2024	3:44	Descending	0.97
5/ 5/2024	14:53	Ascending	0.09
5/19/2024	9:34	Descending	0.84
6/ 1/2024	20:07	Ascending	0.27
6/15/2024	13:16	Descending	0.63
6/28/2024	21:25	Ascending	0.50
7/12/2024	15:26	Descending	0.38
7/25/2024	22:32	Ascending	0.74
8/ 8/2024	18:05	Descending	0.16
8/22/2024	3:26	Ascending	0.92
9/ 4/2024	22:42	Descending	0.03
9/18/2024	12:50	Ascending	1.00
10/ 2/2024	4:51	Descending	0.00
10/16/2024	0:04	Ascending	0.97
10/29/2024	10:43	Descending	0.08
11/12/2024	8:58	Ascending	0.83
11/25/2024	14:30	Descending	0.27
12/ 9/2024	12:35	Ascending	0.60
12/22/2024	16:20	Descending	0.52

Meteor Showers Report for 1/ 1/2024 to 12/31/2024

Date	Meteor Shower	ZHR	RA	DEC	Illum. Frac.	Longitude
1/ 4/2024	Quadrantids	80	15h28m	50°	0.45	284°
4/11/2024	Virginids	5	14h04m	-9°	0.12	22°
4/21/2024	Lyrids	12	18h08m	32°	0.95	32°
4/27/2024	alpha-Scorpiids	5	16h32m	-24°	0.86	38°
5/ 4/2024	eta-Aquarids	35	22h20m	-1°	0.16	45°
5/12/2024	alpha-Scorpiids	5	16h04m	-24°	0.24	52°
6/ 9/2024	Ophiuchids	5	17h56m	-23°	0.12	79°
6/19/2024	Ophiuchids	5	17h20m	-20°	0.94	89°
7/ 7/2024	Capricornids	5			0.03	106°
7/14/2024	Capricornids	5	20h44m	-15°	0.57	113°
7/20/2024	alpha-Cygnids	5	21h00m	48°	0.99	118°
7/25/2024	Capricornids	5	21h00m	-15°	0.77	123°
7/28/2024	delta-Aquarids	20	22h36m	-17°	0.43	126°
7/30/2024	Piscis Australids	5	22h40m	-30°	0.23	128°
8/ 1/2024	alpha-Capricornids	5	20h36m	-10°	0.08	130°
8/ 5/2024	iota-Aquarids	8	22h10m	-15°	0.02	134°
8/12/2024	Perseids	75	3h04m	58°	0.51	140°
8/20/2024	alpha-Cygnids	5	21h00m	48°	0.99	148°
9/ 7/2024	Piscids	10	0h36m	7°	0.18	166°
9/20/2024	Piscids	5	0h24m	0°	0.90	178°
10/12/2024	Piscids	??	1h44m	14°	0.71	200°
10/21/2024	Orionids	25	6h24m	15°	0.77	209°
11/ 2/2024	Taurids	8	3h44m	14°	0.01	221°

Midway, UT (JMC) Latitude: 40°30'43" N Longitude: 111°28'40" W
 Local Time = UT - 7.00 hours Elevation: 1706 meters Year 2024
 Page 26

11/17/2024	Leonids	10	10h08m	22°	0.95	236°
12/ 8/2024	Puppids-Velids	15	9h00m	-48°	0.51	257°
12/13/2024	Geminids	75	7h28m	32°	0.96	262°
12/22/2024	Ursids	5	14h28m	78°	0.52	271°
12/25/2024	Puppids-Velids	15	9h20m	-65°	0.25	274°

Twilight Report for 1/ 1/2024 to 12/31/2024

Date	Sun		Astronomical		Nautical		Civil	
	Rise	Set	Begin	End	Begin	End	Begin	End
1/ 1/2024	7:49	17:10	6:06	18:53	6:39	18:19	7:14	17:45
1/ 8/2024	7:49	17:16	6:07	18:58	6:40	18:25	7:14	17:51
1/15/2024	7:47	17:23	6:06	19:05	6:39	18:32	7:13	17:58
1/22/2024	7:44	17:31	6:04	19:11	6:36	18:39	7:09	18:06
1/29/2024	7:38	17:40	6:00	19:19	6:32	18:46	7:05	18:14
2/ 5/2024	7:32	17:49	5:54	19:26	6:26	18:54	6:59	18:22
2/12/2024	7:24	17:57	5:47	19:33	6:19	19:02	6:51	18:30
2/19/2024	7:15	18:05	5:39	19:41	6:11	19:09	6:42	18:38
2/26/2024	7:05	18:14	5:30	19:49	6:01	19:17	6:33	18:45
3/ 4/2024	6:54	18:21	5:19	19:56	5:51	19:25	6:22	18:53
3/11/2024	6:43	18:29	5:08	20:04	5:40	19:32	6:11	19:01
3/18/2024	6:32	18:37	4:56	20:12	5:28	19:40	6:00	19:08
3/25/2024	6:20	18:44	4:44	20:20	5:16	19:48	5:48	19:16
4/ 1/2024	6:09	18:51	4:31	20:29	5:04	19:56	5:37	19:23
4/ 8/2024	5:57	18:59	4:17	20:38	4:52	20:04	5:25	19:31
4/15/2024	5:46	19:06	4:04	20:48	4:40	20:12	5:14	19:39
4/22/2024	5:36	19:13	3:51	20:58	4:28	20:21	5:03	19:46
4/29/2024	5:27	19:20	3:38	21:09	4:17	20:30	4:53	19:54
5/ 6/2024	5:18	19:28	3:26	21:19	4:06	20:39	4:43	20:02
5/13/2024	5:11	19:34	3:15	21:30	3:57	20:48	4:35	20:10
5/20/2024	5:05	19:41	3:05	21:41	3:49	20:57	4:28	20:17
5/27/2024	5:00	19:47	2:56	21:50	3:42	21:04	4:23	20:24
6/ 3/2024	4:57	19:52	2:50	21:59	3:38	21:11	4:19	20:30
6/10/2024	4:55	19:56	2:46	22:05	3:35	21:16	4:17	20:34
6/17/2024	4:55	19:59	2:45	22:09	3:34	21:20	4:17	20:37
6/24/2024	4:57	20:00	2:46	22:11	3:36	21:21	4:18	20:39
7/ 1/2024	4:59	20:00	2:51	22:09	3:40	21:20	4:21	20:38
7/ 8/2024	5:04	19:58	2:57	22:05	3:45	21:17	4:26	20:36
7/15/2024	5:09	19:55	3:05	21:58	3:51	21:12	4:32	20:32
7/22/2024	5:15	19:50	3:15	21:49	3:59	21:05	4:38	20:26
7/29/2024	5:21	19:43	3:25	21:39	4:07	20:57	4:45	20:19
8/ 5/2024	5:28	19:36	3:36	21:28	4:16	20:47	4:53	20:10
8/12/2024	5:34	19:27	3:46	21:15	4:24	20:37	5:00	20:01
8/19/2024	5:41	19:17	3:56	21:02	4:33	20:25	5:08	19:50
8/26/2024	5:48	19:06	4:06	20:49	4:41	20:13	5:15	19:39
9/ 2/2024	5:55	18:55	4:15	20:35	4:49	20:01	5:22	19:28
9/ 9/2024	6:02	18:44	4:23	20:22	4:57	19:48	5:30	19:16
9/16/2024	6:08	18:32	4:32	20:09	5:05	19:36	5:37	19:04
9/23/2024	6:15	18:20	4:40	19:56	5:12	19:24	5:44	18:52
9/30/2024	6:22	18:09	4:47	19:44	5:19	19:12	5:51	18:40
10/ 7/2024	6:29	17:57	4:54	19:32	5:26	19:00	5:58	18:29
10/14/2024	6:37	17:46	5:02	19:21	5:33	18:50	6:05	18:18
10/21/2024	6:44	17:36	5:09	19:12	5:40	18:40	6:12	18:08
10/28/2024	6:52	17:27	5:16	19:03	5:47	18:31	6:19	17:59
11/ 4/2024	7:00	17:18	5:23	18:56	5:55	18:24	6:27	17:51
11/11/2024	7:08	17:11	5:30	18:50	6:02	18:18	6:35	17:45
11/18/2024	7:17	17:06	5:37	18:45	6:09	18:13	6:42	17:40
11/25/2024	7:24	17:02	5:43	18:42	6:16	18:10	6:50	17:36

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Page 27

12/ 2/2024	7:32	16:59	5:50	18:41	6:23	18:08	6:56	17:35
12/ 9/2024	7:38	16:59	5:55	18:42	6:28	18:09	7:02	17:35
12/16/2024	7:43	17:00	6:00	18:44	6:33	18:11	7:07	17:36
12/23/2024	7:47	17:04	6:04	18:47	6:37	18:14	7:11	17:40
12/30/2024	7:49	17:09	6:06	18:52	6:39	18:19	7:13	17:44