

Date	DoW	Begin				Sunrise	Sun East	Local Noon	Sun West	End				Length of Day	Noon Eqn Time (min.)	Noon sun declination (deg.)	9 PM Lunar Illum.	
		Astro-nomical Twilight	15-deg. Twilight	Nautical Twilight	Civil Twilight					End Civil Twilight	End 15-deg. Twilight	Astro-nomical Twilight						
01/01/16	F	5:43:44	6:01:09	6:18:51	6:55:19	7:28:14	11:56:38			16:25:12	16:58:07	17:34:35	17:52:17	18:09:42	8:56:58	-3.444	-22.996	51
01/02/16	Sat	5:43:53	6:01:18	6:18:59	6:55:24	7:28:17	11:57:07			16:26:06	16:58:59	17:35:25	17:53:06	18:10:30	8:57:49	-3.913	-22.910	41
01/03/16	Sun	5:44:01	6:01:24	6:19:04	6:55:28	7:28:18	11:57:34			16:27:02	16:59:52	17:36:16	17:53:56	18:11:20	8:58:44	-4.377	-22.816	32
01/04/16	M	5:44:05	6:01:28	6:19:07	6:55:29	7:28:16	11:58:02			16:28:00	17:00:47	17:37:08	17:54:48	18:12:11	8:59:44	-4.835	-22.715	24
01/05/16	Tu	5:44:08	6:01:31	6:19:09	6:55:27	7:28:11	11:58:29			16:28:59	17:01:43	17:38:02	17:55:40	18:13:03	9:00:47	-5.286	-22.606	16
01/06/16	W	5:44:09	6:01:30	6:19:07	6:55:23	7:28:05	11:58:56			16:30:00	17:02:41	17:38:58	17:56:35	18:13:56	9:01:55	-5.731	-22.489	9
01/07/16	Th	5:44:08	6:01:28	6:19:04	6:55:17	7:27:55	11:59:22			16:31:03	17:03:41	17:39:54	17:57:30	18:14:51	9:03:08	-6.167	-22.365	4
01/08/16	F	5:44:04	6:01:24	6:18:59	6:55:09	7:27:43	11:59:48			16:32:07	17:04:41	17:40:52	17:58:27	18:15:47	9:04:24	-6.596	-22.234	1
01/09/16	Sat	5:43:59	6:01:17	6:18:51	6:54:58	7:27:29	12:00:13			16:33:13	17:05:43	17:41:51	17:59:25	18:16:44	9:05:44	-7.017	-22.096	0
01/10/16	Sun	5:43:51	6:01:09	6:18:41	6:54:45	7:27:12	12:00:37			16:34:20	17:06:46	17:42:51	18:00:24	18:17:41	9:07:08	-7.428	-21.950	2
01/11/16	M	5:43:41	6:00:58	6:18:29	6:54:30	7:26:52	12:01:02			16:35:28	17:07:51	17:43:52	18:01:24	18:18:40	9:08:36	-7.830	-21.797	6
01/12/16	Tu	5:43:29	6:00:45	6:18:15	6:54:12	7:26:30	12:01:25			16:36:38	17:08:57	17:44:54	18:02:24	18:19:40	9:10:07	-8.221	-21.637	12
01/13/16	W	5:43:15	6:00:29	6:17:58	6:53:52	7:26:06	12:01:48			16:37:49	17:10:03	17:45:57	18:03:26	18:20:41	9:11:43	-8.603	-21.470	20
01/14/16	Th	5:42:59	6:00:12	6:17:39	6:53:29	7:25:39	12:02:10			16:39:01	17:11:11	17:47:02	18:04:29	18:21:43	9:13:21	-8.973	-21.297	30
01/15/16	F	5:42:40	5:59:52	6:17:18	6:53:04	7:25:10	12:02:32			16:40:14	17:12:20	17:48:07	18:05:33	18:22:45	9:15:04	-9.333	-21.116	41
01/16/16	Sat	5:42:19	5:59:30	6:16:55	6:52:37	7:24:38	12:02:53			16:41:28	17:13:29	17:49:12	18:06:37	18:23:49	9:16:50	-9.681	-20.929	52
01/17/16	Sun	5:41:56	5:59:06	6:16:29	6:52:08	7:24:04	12:03:13			16:42:43	17:14:40	17:50:19	18:07:42	18:24:53	9:18:39	-10.017	-20.735	63
01/18/16	M	5:41:31	5:58:40	6:16:01	6:51:36	7:23:28	12:03:32			16:43:59	17:15:51	17:51:26	18:08:48	18:25:58	9:20:31	-10.341	-20.534	74
01/19/16	Tu	5:41:04	5:58:11	6:15:31	6:51:02	7:22:49	12:03:51			16:45:16	17:17:03	17:52:35	18:09:55	18:27:03	9:22:26	-10.652	-20.327	83
01/20/16	W	5:40:35	5:57:41	6:14:59	6:50:26	7:22:08	12:04:09			16:46:33	17:18:16	17:53:43	18:11:02	18:28:09	9:24:25	-10.951	-20.114	90
01/21/16	Th	5:40:03	5:57:08	6:14:25	6:49:48	7:21:25	12:04:26			16:47:51	17:19:29	17:54:53	18:12:10	18:29:16	9:26:26	-11.238	-19.894	96
01/22/16	F	5:39:29	5:56:33	6:13:49	6:49:08	7:20:40	12:04:43			16:49:10	17:20:43	17:56:03	18:13:19	18:30:23	9:28:31	-11.511	-19.669	99
01/23/16	Sat	5:38:53	5:55:56	6:13:10	6:48:25	7:19:52	12:04:58			16:50:30	17:21:58	17:57:13	18:14:28	18:31:31	9:30:38	-11.772	-19.437	100
01/24/16	Sun	5:38:15	5:55:17	6:12:29	6:47:40	7:19:02	12:05:13			16:51:50	17:23:13	17:58:24	18:15:37	18:32:40	9:32:48	-12.020	-19.199	99
01/25/16	M	5:37:35	5:54:36	6:11:47	6:46:53	7:18:10	12:05:27			16:53:11	17:24:28	17:59:36	18:16:47	18:33:48	9:35:00	-12.254	-18.955	95
01/26/16	Tu	5:36:53	5:53:52	6:11:02	6:46:04	7:17:16	12:05:40			16:54:32	17:25:44	18:00:48	18:17:58	18:34:58	9:37:15	-12.475	-18.705	91
01/27/16	W	5:36:09	5:53:07	6:10:15	6:45:14	7:16:20	12:05:53			16:55:53	17:27:01	18:02:00	18:19:09	18:36:08	9:39:33	-12.684	-18.450	84
01/28/16	Th	5:35:23	5:52:20	6:09:26	6:44:21	7:15:23	12:06:05			16:57:15	17:28:18	18:03:13	18:20:20	18:37:18	9:41:53	-12.879	-18.189	77
01/29/16	F	5:34:35	5:51:31	6:08:36	6:43:26	7:14:23	12:06:15			16:58:37	17:29:35	18:04:26	18:21:32	18:38:29	9:44:15	-13.060	-17.923	68
01/30/16	Sat	5:33:45	5:50:39	6:07:43	6:42:29	7:13:21	12:06:26			17:00:00	17:30:53	18:05:40	18:22:44	18:39:40	9:46:39	-13.229	-17.651	59
01/31/16	Sun	5:32:53	5:49:46	6:06:48	6:41:30	7:12:17	12:06:35			17:01:23	17:32:11	18:06:54	18:23:57	18:40:51	9:49:06	-13.384	-17.375	50
02/01/16	M	5:31:58	5:48:51	6:05:52	6:40:30	7:11:12	12:06:43			17:02:46	17:33:29	18:08:08	18:25:10	18:42:03	9:51:34	-13.526	-17.092	40
02/02/16	Tu	5:31:02	5:47:54	6:04:53	6:39:27	7:10:04	12:06:51			17:04:09	17:34:47	18:09:23	18:26:23	18:43:15	9:54:05	-13.654	-16.805	31
02/03/16	W	5:30:04	5:46:55	6:03:53	6:38:23	7:08:55	12:06:58			17:05:32	17:36:06	18:10:37	18:27:36	18:44:28	9:56:37	-13.769	-16.513	22
02/04/16	Th	5:29:05	5:45:54	6:02:51	6:37:17	7:07:45	12:07:04			17:06:56	17:37:24	18:11:52	18:28:50	18:45:41	9:59:11	-13.871	-16.217	14
02/05/16	F	5:28:03	5:44:52	6:01:47	6:36:10	7:06:32	12:07:09			17:08:19	17:38:43	18:13:07	18:30:04	18:46:54	10:01:47	-13.960	-15.915	8
02/06/16	Sat	5:26:59	5:43:47	6:00:41	6:35:00	7:05:18	12:07:14			17:09:43	17:40:02	18:14:23	18:31:18	18:48:07	10:04:25	-14.035	-15.609	3
02/07/16	Sun	5:25:54	5:42:41	6:59:34	6:33:49	7:04:03	12:07:18			17:11:07	17:41:21	18:15:38	18:32:32	18:49:20	10:07:04	-14.097	-15.299	0
02/08/16	M	5:24:47	5:41:33	5:58:25	6:32:37	7:02:45	12:07:21			17:12:30	17:42:40	18:16:54	18:33:47	18:50:34	10:09:45	-14.146	-14.984	0
02/09/16	Tu	5:23:38	5:40:23	5:57:14	6:31:23	7:01:27	12:07:23			17:13:54	17:43:59	18:18:09	18:35:01	18:51:48	10:12:27	-14.182	-14.665	3
02/10/16	W	5:22:27	5:39:12	5:56:02	6:30:07	7:00:06	12:07:24			17:15:17	17:45:18	18:19:25	18:36:16	18:53:02	10:15:11	-14.205	-14.342	9
02/11/16	Th	5:21:15	5:37:59	5:54:48	6:28:50	6:58:45	12:07:25			17:16:40	17:46:37	18:20:41	18:37:31	18:54:17	10:17:55	-14.214	-14.015	17
02/12/16	F	5:20:00	5:36:44	5:53:32	6:27:31	6:57:22	12:07:25			17:18:03	17:47:56	18:21:57	18:38:46	18:55:31	10:20:42	-14.211	-13.684	26
02/13/16	Sat	5:18:44	5:35:28	5:52:15	6:26:10	6:55:57	12:07:24			17:19:26	17:49:15	18:23:13	18:40:01	18:56:46	10:23:29	-14.195	-13.349	37
02/14/16	Sun	5:17:27	5:34:10	5:50:56	6:24:49	6:54:32	12:07:22			17:20:49	17:50:33	18:24:28	18:41:16	18:58:00	10:26:17	-14.165	-13.011	48
02/15/16	M	5:16:08	5:32:50	5:49:36	6:23:26	6:53:04	12:07:19			17:22:11	17:51:52	18:25:44	18:42:31	18:59:15	10:29:07	-14.124	-12.669	59
02/16/16	Tu	5:14:47	5:31:29	5:48:14	6:22:01	6:51:36	12:07:16			17:23:34	17:53:10	18:27:00	18:43:46	19:00:30	10:31:57	-14.070	-12.324	70
02/17/16	W	5:13:24	5:30:06	5:46:50	6:20:35	6:50:07	12:07:12			17:24:56	17:54:29	18:28:16	18:45:02	19:01:46	10:34:49	-14.003	-11.976	79
02/18/16	Th	5:12:00	5:28:42	5:45:26	6:19:08	6:48:36	12:07:07			17:26:17	17:55:47	18:29:32	18:46:17	19:03:01	10:37:42	-13.925	-11.624	87
02/19/16	F	5:10:35	5:27:16	5:44:00	6:17:40	6:47:04	12:07:02			17:27:39	17:57:05	18:30:48	18:47:33	19:04:16	10:40:35	-13.835	-11.269	93
02/20/16	Sat	5:09:08	5:25:49	5:42:32	6:16:10	6:45:31	12:06:56			17:29:00	17:58:23	18:32:04	18:48:48	19:05:32	10:43:29	-13.734	-10.912	97
02/21/16	Sun	5:07:39	5:24:21	5:41:03	6:14:39	6:43:57	12:06:49			17:30:21	17:59:41	18:33:19	18:50:04	19:06:48	10:46:24	-13.622	-10.552	100
02/22/16	M	5:06:09	5:22:51	5:39:33	6:13:07	6:42:22	12:06:42			17:31:42	18:00:58	18:34:35	18:51:19	19:08:04	10:49:20	-13.499	-10.188	100
02/23/16	Tu	5:04:37	5:21:20	5:38:02	6:11:34	6:40:46	12:06:34			17:33:02	18:02:16	18:35:51	18:52:35	19:09:20	10:52:16	-13.365	-9.823	98
02/24/16	W	5:03:05	5:19:47	5:36:29	6:10:00	6:39:09	12:06:25			17:34:22	18:03:33	18:37:07	18:53:51	19:10:36	10:55:13	-13.222	-9.455	95
02/25/16	Th	5:01:30	5:18:14	5:34:55	6:08:25	6:37:31	12:06:16			17:35:42	18:04:50	18:38:23	18:55:07	19:11:52	10:58:11	-13.069	-9.084	90
02/26/16	F	4:59:55	5:16:39	5:33:20	6:06:48	6:35:52	12:06:06			17:37:02	18:06:07	18:39:39	18:56:23	19:13:09	11:01:10	-12.906	-8.711	83
02/27/16	Sat	4:58:18	5:1															

Date	DoW	Begin	Begin	Begin	Begin	Sunrise	Sun East	Local Noon	Sun West	Sunset	End Civil	End Nautical	End 15-deg.	End Astro-nomical	Length of Day	Neon	Neon	9 PM
		Astro-nomical Twilight	15-deg. Twilight	Nautical Twilight	Civil Twilight											Eqn Time	sun declination	
03/17/16	Th*	5:24:03	5:41:20	5:58:23	6:32:04	7:00:47		13:01:20		19:02:39	19:31:26	20:05:13	20:22:20	20:39:41	12:01:52	-8.135	-0.947	75
03/18/16	F*	5:22:05	5:39:25	5:56:31	6:30:14	6:58:58		13:01:02	19:02:50	19:03:53	19:32:42	20:06:31	20:23:40	20:41:05	12:04:56	-7.843	-0.552	83
03/19/16	Sat*	5:20:06	5:37:29	5:54:38	6:28:24	6:57:08	6:59:46	13:00:45	19:00:55	19:05:08	19:33:57	20:07:49	20:25:01	20:42:28	12:07:59	-7.548	-0.156	90
03/20/16	Sun*	5:18:07	5:35:33	5:52:44	6:26:33	6:55:19	7:01:06	13:00:27	18:58:59	19:06:22	19:35:12	20:09:07	20:26:22	20:43:53	12:11:03	-7.251	0.239	95
03/21/16	M*	5:16:07	5:33:37	5:50:50	6:24:42	6:53:29	7:02:26	13:00:09	18:57:04	19:07:36	19:36:27	20:10:26	20:27:43	20:45:18	12:14:07	-6.951	0.633	98
03/22/16	Tu*	5:14:06	5:31:40	5:48:55	6:22:51	6:51:39	7:03:46	12:59:51	18:55:08	19:08:49	19:37:42	20:11:44	20:29:05	20:46:43	12:17:10	-6.651	1.027	100
03/23/16	W*	5:12:05	5:29:42	5:47:01	6:21:00	6:49:50	7:05:05	12:59:33	18:53:12	19:10:03	19:38:57	20:13:04	20:30:27	20:48:09	12:20:13	-6.348	1.421	100
03/24/16	Th*	5:10:03	5:27:44	5:45:05	6:19:09	6:48:00	7:06:25	12:59:15	18:51:17	19:11:17	19:40:13	20:14:23	20:31:49	20:49:35	12:23:17	-6.045	1.814	98
03/25/16	F*	5:08:00	5:25:45	5:43:10	6:17:17	6:46:10	7:07:44	12:58:56	18:49:22	19:12:30	19:41:28	20:15:43	20:33:12	20:51:02	12:26:20	-5.742	2.207	94
03/26/16	Sat*	5:05:57	5:23:46	5:41:14	6:15:26	6:44:21	7:09:03	12:58:38	18:47:26	19:13:44	19:42:43	20:17:02	20:34:35	20:52:29	12:29:23	-5.439	2.599	89
03/27/16	Easter*	5:03:53	5:21:46	5:39:18	6:13:34	6:42:31	7:10:22	12:58:20	18:45:31	19:14:57	19:43:59	20:18:23	20:35:59	20:53:58	12:32:26	-5.136	2.990	82
03/28/16	M*	5:01:48	5:19:46	5:37:21	6:11:42	6:40:42	7:11:41	12:58:02	18:43:36	19:16:10	19:45:14	20:19:43	20:37:23	20:55:26	12:35:28	-4.833	3.379	74
03/29/16	Tu*	4:59:43	5:17:46	5:35:24	6:09:51	6:38:52	7:13:00	12:57:44	18:41:41	19:17:23	19:46:30	20:21:04	20:38:48	20:56:56	12:38:31	-4.532	3.768	65
03/30/16	W*	4:57:38	5:15:45	5:33:28	6:07:59	6:37:03	7:14:19	12:57:26	18:39:47	19:18:36	19:47:46	20:22:25	20:40:13	20:58:26	12:41:33	-4.232	4.156	55
03/31/16	Th*	4:55:32	5:13:44	5:31:31	6:06:08	6:35:15	7:15:38	12:57:08	18:37:53	19:19:50	19:49:02	20:23:47	20:41:38	20:59:57	12:44:35	-3.934	4.543	45
04/01/16	F*	4:53:26	5:11:43	5:29:33	6:04:16	6:33:26	7:16:56	12:56:50	18:35:59	19:21:03	19:50:18	20:25:09	20:43:05	21:01:28	12:47:37	-3.638	4.928	35
04/02/16	Sat*	4:51:19	5:09:42	5:27:36	6:02:25	6:31:38	7:18:15	12:56:33	18:34:05	19:22:16	19:51:34	20:26:31	20:44:31	21:03:00	12:50:38	-3.345	5.311	25
04/03/16	Sun*	4:49:12	5:07:40	5:25:39	6:00:34	6:29:50	7:19:34	12:56:15	18:32:12	19:23:29	19:52:51	20:27:54	20:45:58	21:04:33	12:53:39	-3.054	5.693	16
04/04/16	M*	4:47:04	5:05:38	5:23:42	5:58:43	6:28:02	7:20:52	12:55:58	18:30:19	19:24:42	19:54:07	20:29:17	20:47:26	21:06:07	12:56:40	-2.766	6.074	8
04/05/16	Tu*	4:44:56	5:03:36	5:21:44	5:56:52	6:26:15	7:22:11	12:55:41	18:28:27	19:25:55	19:55:24	20:30:41	20:48:54	21:07:41	12:59:40	-2.481	6.453	3
04/06/16	W*	4:42:48	5:01:34	5:19:47	5:55:02	6:24:29	7:23:29	12:55:24	18:26:35	19:27:08	19:56:41	20:32:05	20:50:23	21:09:16	13:02:40	-2.200	6.830	0
04/07/16	Th*	4:40:40	4:59:32	5:17:50	5:53:11	6:22:42	7:24:48	12:55:07	18:24:43	19:28:21	19:57:58	20:33:29	20:51:53	21:10:52	13:05:39	-1.923	7.205	1
04/08/16	F*	4:38:31	4:57:30	5:15:53	5:51:22	6:20:56	7:26:06	12:54:51	18:22:53	19:29:34	19:59:15	20:34:54	20:53:23	21:12:29	13:08:38	-1.650	7.578	4
04/09/16	Sat*	4:36:22	4:55:28	5:13:56	5:49:32	6:19:11	7:27:25	12:54:35	18:21:02	19:30:47	20:00:33	20:36:19	20:54:53	21:14:06	13:11:36	-1.380	7.949	11
04/10/16	Sun*	4:34:13	4:53:25	5:11:59	5:47:43	6:17:26	7:28:43	12:54:19	18:19:12	19:32:00	20:01:50	20:37:44	20:56:24	21:15:44	13:14:34	-1.115	8.317	19
04/11/16	M*	4:32:04	4:51:23	5:10:02	5:45:54	6:15:42	7:30:01	12:54:03	18:17:23	19:33:13	20:03:08	20:39:10	20:57:55	21:17:23	13:17:31	-0.855	8.683	29
04/12/16	Tu*	4:29:54	4:49:21	5:08:06	5:44:06	6:13:58	7:31:20	12:53:48	18:15:35	19:34:26	20:04:25	20:40:36	20:59:27	21:19:02	13:20:28	-0.599	9.047	39
04/13/16	W*	4:27:45	4:47:19	5:06:09	5:42:18	6:12:15	7:32:38	12:53:33	18:13:47	19:35:39	20:05:43	20:42:02	21:01:00	21:20:42	13:23:24	-0.349	9.409	50
04/14/16	Th*	4:25:35	4:45:17	5:04:13	5:40:31	6:10:33	7:33:56	12:53:18	18:11:59	19:36:52	20:07:01	20:43:29	21:02:33	21:22:23	13:26:20	-0.103	9.767	60
04/15/16	F*	4:23:25	4:43:15	5:02:18	5:38:44	6:08:51	7:35:14	12:53:04	18:10:13	19:38:05	20:08:19	20:44:56	21:04:06	21:24:05	13:29:14	0.137	10.123	70
04/16/16	Sat*	4:21:15	4:41:13	5:00:22	5:36:58	6:07:10	7:36:32	12:52:50	18:08:27	19:39:18	20:09:38	20:46:24	21:05:40	21:25:47	13:32:08	0.370	10.476	78
04/17/16	Sun*	4:19:05	4:39:11	4:58:27	5:35:12	6:05:30	7:37:50	12:52:36	18:06:42	19:40:31	20:10:56	20:47:52	21:07:15	21:27:30	13:35:01	0.598	10.827	86
04/18/16	M*	4:16:55	4:37:10	4:56:33	5:33:27	6:03:50	7:39:08	12:52:23	18:04:58	19:41:44	20:12:14	20:49:20	21:08:50	21:29:14	13:37:54	0.820	11.174	92
04/19/16	Tu*	4:14:46	4:35:09	4:54:39	5:31:43	6:02:12	7:40:26	12:52:10	18:03:15	19:42:57	20:13:33	20:50:48	21:10:25	21:30:59	13:40:45	1.035	11.518	96
04/20/16	W*	4:12:36	4:33:09	4:52:45	5:29:59	6:00:34	7:41:43	12:51:57	18:01:33	19:44:09	20:14:51	20:52:17	21:12:01	21:32:44	13:43:36	1.242	11.859	99
04/21/16	Th*	4:10:26	4:31:09	4:50:52	5:28:16	5:58:57	7:43:01	12:51:45	17:59:51	19:45:22	20:16:10	20:53:46	21:13:38	21:34:30	13:46:25	1.443	12.197	100
04/22/16	F*	4:08:17	4:29:09	4:49:00	5:26:34	5:57:21	7:44:19	12:51:34	17:58:11	19:46:35	20:17:29	20:55:15	21:15:14	21:36:17	13:49:14	1.636	12.531	99
04/23/16	Sat*	4:06:08	4:27:07	4:47:08	5:24:53	5:55:46	7:45:36	12:51:23	17:56:32	19:47:47	20:18:48	20:56:45	21:16:52	21:38:04	13:52:01	1.822	12.862	97
04/24/16	Sun*	4:03:59	4:25:11	4:45:17	5:23:13	5:54:12	7:46:54	12:51:12	17:54:54	19:49:00	20:20:07	20:58:15	21:18:30	21:39:52	13:54:48	1.999	13.190	92
04/25/16	M*	4:01:50	4:23:12	4:43:26	5:21:34	5:52:39	7:48:11	12:51:02	17:53:16	19:50:12	20:21:26	20:59:45	21:20:08	21:41:41	13:57:33	2.169	13.513	86
04/26/16	Tu*	3:59:42	4:21:15	4:41:37	5:19:55	5:51:07	7:49:28	12:50:52	17:51:40	19:51:25	20:22:45	21:01:16	21:21:46	21:43:30	14:00:18	2.330	13.834	79
04/27/16	W*	3:57:34	4:19:17	4:39:48	5:18:18	5:49:36	7:50:45	12:50:43	17:50:05	19:52:37	20:24:04	21:02:46	21:23:25	21:45:20	14:03:01	2.482	14.150	70
04/28/16	Th*	3:55:26	4:17:21	4:38:00	5:16:41	5:48:07	7:52:02	12:50:34	17:48:32	19:53:49	20:25:23	21:04:17	21:25:05	21:47:11	14:05:43	2.626	14.463	61
04/29/16	F*	3:53:19	4:15:25	4:36:13	5:15:06	5:46:38	7:53:19	12:50:26	17:46:59	19:55:01	20:26:41	21:05:48	21:26:44	21:49:02	14:08:23	2.761	14.771	50
04/30/16	Sat*	3:51:13	4:13:31	4:34:26	5:13:32	5:45:11	7:54:35	12:50:19	17:45:28	19:56:13	20:28:00	21:07:19	21:28:24	21:50:54	14:11:02	2.886	15.076	40
05/01/16	Sun*	3:49:07	4:11:37	4:32:41	5:11:59	5:43:45	7:55:52	12:50:12	17:43:58	19:57:25	20:29:19	21:08:50	21:30:04	21:52:46	14:13:40	3.002	15.376	29
05/02/16	M*	3:47:01	4:09:43	4:30:57	5:10:27	5:42:20	7:57:08	12:50:05	17:42:30	19:58:37	20:30:38	21:10:21	21:31:45	21:54:39	14:16:16	3.109	15.672	19
05/03/16	Tu*	3:44:57	4:07:51	4:29:14	5:08:57	5:40:57	7:58:24	12:50:00	17:41:03	19:59:48	20:31:56	21:11:53	21:33:25	21:56:33	14:18:51	3.207	15.964	11
05/04/16	W*	3:42:53	4:06:00	4:27:32	5:07:27	5:39:35	7:59:39	12:49:54	17:39:37	20:00:59	20:33:15	21:13:24	21:35:06	21:58:26	14:21:24	3.294	16.251	4
05/05/16	Th*	3:40:49	4:04:10	4:25:51	5:05:59	5:38:14	8:00:55	12:49:50	17:38:13	20:02:10	20:34:33	21:14:55	21:36:47	22:00:20	14:23:56	3.373	16.534	1
05/06/16	F*	3:38:47	4:02:20	4:24:12	5:04:33	5:36:55	8:02:10	12:49:45	17:36:50	20:03:20	20:35:51	21:16:26	21:38:27	22:02:15	14:26:25	3.442	16.813	0
05/07/16	Sat*	3:36:45	4:00:32	4:22:33	5:03:08	5:35:37	8:03:24	12:49:42	17:35:29	20:04:31	20:37:09	21:17:57	21:40:08	22:04:09	14:28:53	3.501	17.086	3
05/08/16	Sun*	3:34:45	3:58:45	4:20:56	5:01:44	5:34:21	8:04:38	12:49:39	17:34:09	20:05:40	20:38:26	21:19:28	21:41:49	22:06:04	14:31:19	3.551	17.355	

HVO -103.297529, 44.108178, Time Zone = MST/MDT

Date	DoW	Begin	Begin	Begin	Begin	Sunrise	Sun	Local	Sun	Sunset	End Civil	End Nautical	End 15-deg.	End	Length	Noon Eqn	Noon sun declination	9 PM Lunar
		Astro-nomical	15-deg.	Nautical	Civil									Astro-nomical				
06/01/16	W*	2:54:23	3:24:49	3:51:10	4:37:13	5:12:40	8:30:29	12:51:08	17:11:32	20:30:00	21:05:34	21:51:47	22:18:18	22:49:00	15:17:20	2.069	22.183	13
06/02/16	Th*	2:53:12	3:23:54	3:50:25	4:36:38	5:12:11	8:31:19	12:51:18	17:11:02	20:30:48	21:06:27	21:52:50	22:19:30	22:50:27	15:18:36	1.906	22.309	6
06/03/16	F*	2:52:06	3:23:03	3:49:42	4:36:06	5:11:45	8:32:08	12:51:28	17:10:35	20:31:33	21:07:17	21:53:51	22:20:39	22:51:52	15:19:49	1.737	22.428	2
06/04/16	Sat*	2:51:02	3:22:15	3:49:03	4:35:36	5:11:20	8:32:55	12:51:38	17:10:09	20:32:18	21:08:07	21:54:50	22:21:46	22:53:13	15:20:57	1.562	22.541	0
06/05/16	Sun*	2:50:03	3:21:30	3:48:26	4:35:09	5:10:58	8:33:40	12:51:49	17:09:46	20:33:00	21:08:54	21:55:46	22:22:51	22:54:32	15:22:02	1.381	22.648	2
06/06/16	M*	2:49:07	3:20:48	3:47:52	4:34:45	5:10:38	8:34:24	12:52:00	17:09:26	20:33:41	21:09:39	21:56:41	22:23:52	22:55:47	15:23:03	1.196	22.748	6
06/07/16	Tu*	2:48:15	3:20:09	3:47:21	4:34:22	5:10:20	8:35:06	12:52:12	17:09:07	20:34:21	21:10:23	21:57:32	22:24:51	22:56:58	15:24:00	1.006	22.841	12
06/08/16	W*	2:47:27	3:19:34	3:46:54	4:34:03	5:10:05	8:35:46	12:52:23	17:08:51	20:34:58	21:11:04	21:58:21	22:25:47	22:58:06	15:24:54	0.811	22.927	20
06/09/16	Th*	2:46:44	3:19:03	3:46:29	4:33:46	5:09:51	8:36:24	12:52:35	17:08:38	20:35:34	21:11:44	21:59:08	22:26:40	22:59:10	15:25:43	0.613	23.007	29
06/10/16	F*	2:46:05	3:18:35	3:46:07	4:33:31	5:09:40	8:37:00	12:52:47	17:08:27	20:36:08	21:12:21	21:59:51	22:27:29	23:00:10	15:26:28	0.411	23.080	38
06/11/16	Sat*	2:45:30	3:18:11	3:45:48	4:33:19	5:09:32	8:37:34	12:53:00	17:08:18	20:36:40	21:12:56	22:00:32	22:28:15	23:01:06	15:27:09	0.207	23.147	48
06/12/16	Sun*	2:44:59	3:17:50	3:45:33	4:33:09	5:09:25	8:38:06	12:53:12	17:08:11	20:37:10	21:13:29	22:01:10	22:28:58	23:01:58	15:27:45	-0.001	23.206	58
06/13/16	M*	2:44:33	3:17:33	3:45:21	4:33:02	5:09:21	8:38:37	12:53:25	17:08:07	20:37:39	21:13:59	22:01:46	22:29:38	23:02:45	15:28:18	-0.210	23.259	67
06/14/16	Tu*	2:44:12	3:17:19	3:45:11	4:32:58	5:09:18	8:39:05	12:53:37	17:08:05	20:38:05	21:14:28	22:02:18	23:00:14	23:03:28	15:28:46	-0.422	23.304	75
06/15/16	W*	2:43:56	3:17:10	3:45:05	4:32:56	5:09:18	8:39:31	12:53:50	17:08:06	20:38:29	21:14:54	22:02:47	23:00:46	23:04:06	15:29:10	-0.635	23.343	83
06/16/16	Th*	2:43:44	3:17:04	3:45:02	4:32:56	5:09:21	8:39:54	12:54:03	17:08:08	20:38:51	21:15:17	22:03:14	23:01:15	23:04:39	15:29:30	-0.850	23.375	90
06/17/16	F*	2:43:37	3:17:01	3:45:03	4:32:59	5:09:25	8:40:16	12:54:16	17:08:13	20:39:11	21:15:38	22:03:37	23:01:40	23:05:08	15:29:46	-1.065	23.400	95
06/18/16	Sat*	2:43:35	3:17:03	3:45:06	4:33:05	5:09:32	8:40:35	12:54:29	17:08:21	20:39:29	21:15:57	22:03:57	23:02:31	23:05:32	15:29:57	-1.281	23.419	98
06/19/16	Sun*	2:43:38	3:17:08	3:45:13	4:33:13	5:09:40	8:40:52	12:54:42	17:08:30	20:39:45	21:16:13	22:04:14	23:02:19	23:05:51	15:30:04	-1.497	23.430	100
06/20/16	M*	2:43:46	3:17:17	3:45:22	4:33:23	5:09:51	8:41:07	12:54:55	17:08:42	20:39:59	21:16:27	22:04:28	23:02:33	23:06:05	15:30:07	-1.713	23.435	99
06/21/16	Tu*	2:43:58	3:17:30	3:45:35	4:33:36	5:10:04	8:41:20	12:55:08	17:08:56	20:40:10	21:16:38	22:04:38	23:02:43	23:06:14	15:30:06	-1.929	23.432	97
06/22/16	W*	2:44:16	3:17:46	3:45:51	4:33:52	5:10:20	8:41:30	12:55:21	17:09:13	20:40:19	21:16:47	22:04:46	23:02:49	23:06:18	15:30:00	-2.144	23.423	93
06/23/16	Th*	2:44:38	3:18:07	3:46:10	4:34:09	5:10:37	8:41:38	12:55:34	17:09:31	20:40:26	21:16:53	22:04:50	23:02:52	23:06:17	15:29:50	-2.358	23.407	86
06/24/16	F*	2:45:05	3:18:30	3:46:32	4:34:30	5:10:56	8:41:44	12:55:46	17:09:52	20:40:31	21:16:56	22:04:51	23:02:51	23:06:12	15:29:35	-2.570	23.384	78
06/25/16	Sat*	2:45:37	3:18:58	3:46:57	4:34:52	5:11:17	8:41:47	12:55:59	17:10:15	20:40:34	21:16:57	22:04:49	23:02:45	23:06:01	15:29:17	-2.780	23.354	68
06/26/16	Sun*	2:46:13	3:19:29	3:47:26	4:35:17	5:11:40	8:41:48	12:56:11	17:10:40	20:40:34	21:16:56	22:04:43	23:02:37	23:05:46	15:28:54	-2.989	23.317	57
06/27/16	M*	2:46:54	3:20:03	3:47:57	4:35:44	5:12:06	8:41:46	12:56:24	17:11:07	20:40:32	21:16:52	22:04:35	23:02:34	23:05:26	15:28:27	-3.195	23.273	46
06/28/16	Tu*	2:47:39	3:20:41	3:48:30	4:36:14	5:12:33	8:41:42	12:56:36	17:11:36	20:40:28	21:16:45	22:04:23	23:02:08	23:05:01	15:27:55	-3.398	23.223	35
06/29/16	W*	2:48:29	3:21:23	3:49:07	4:36:45	5:13:02	8:41:36	12:56:48	17:12:07	20:40:22	21:16:36	22:04:08	23:01:47	23:04:32	15:27:20	-3.598	23.166	24
06/30/16	Th*	2:49:23	3:22:07	3:49:47	4:37:19	5:13:33	8:41:27	12:57:00	17:12:40	20:40:13	21:16:24	22:03:50	23:01:24	23:03:58	15:26:40	-3.794	23.102	15
07/01/16	F*	2:50:21	3:22:55	3:50:29	4:37:55	5:14:06	8:41:16	12:57:11	17:13:15	20:40:02	21:16:09	22:03:29	23:00:56	23:03:19	15:25:57	-3.986	23.031	8
07/02/16	Sat*	2:51:23	3:23:46	3:51:14	4:38:33	5:14:40	8:41:03	12:57:23	17:13:51	20:39:49	21:15:53	22:03:04	23:00:25	23:02:36	15:25:09	-4.174	22.954	3
07/03/16	Sun*	2:52:29	3:24:40	3:52:01	4:39:13	5:15:16	8:40:47	12:57:34	17:14:30	20:39:34	21:15:33	22:02:37	23:00:29	23:01:49	15:24:17	-4.357	22.870	0
07/04/16	M*	2:53:38	3:25:37	3:52:51	4:39:55	5:15:54	8:40:29	12:57:44	17:15:10	20:39:16	21:15:11	22:02:06	23:00:13	23:00:58	15:23:22	-4.535	22.779	1
07/05/16	Tu*	2:54:51	3:26:36	3:53:43	4:40:38	5:16:34	8:40:08	12:57:55	17:15:52	20:38:56	21:14:46	22:01:33	23:00:03	23:00:03	15:22:22	-4.707	22.682	4
07/06/16	W*	2:56:07	3:27:38	3:54:38	4:41:24	5:17:15	8:39:45	12:58:04	17:16:36	20:38:33	21:14:19	22:00:56	23:00:00	23:00:00	15:21:19	-4.873	22.578	9
07/07/16	Th*	2:57:26	3:28:43	3:55:34	4:42:11	5:17:57	8:39:20	12:58:14	17:17:21	20:38:09	21:13:50	22:00:17	23:00:58	23:00:58	15:20:11	-5.033	22.468	15
07/08/16	F*	2:58:48	3:29:51	3:56:33	4:43:00	5:18:41	8:38:52	12:58:23	17:18:08	20:37:42	21:13:17	21:59:34	23:00:26	23:00:26	15:19:00	-5.185	22.351	23
07/09/16	Sat*	3:00:13	3:31:01	3:57:34	4:43:51	5:19:27	8:38:22	12:58:32	17:18:57	20:37:13	21:12:43	21:58:49	23:00:13	23:00:13	15:17:46	-5.331	22.228	32
07/10/16	Sun*	3:01:41	3:32:13	3:58:37	4:44:44	5:20:14	8:37:49	12:58:40	17:19:46	20:36:41	21:12:06	21:58:01	23:00:16	23:00:16	15:16:28	-5.469	22.098	41
07/11/16	M*	3:03:11	3:33:27	3:59:42	4:45:37	5:21:02	8:37:15	12:58:48	17:20:38	20:36:08	21:11:26	21:57:10	23:00:15	23:00:15	15:15:06	-5.599	21.962	51
07/12/16	Tu*	3:04:43	3:34:43	4:00:49	4:46:33	5:21:51	8:36:37	12:58:55	17:21:30	20:35:32	21:10:44	21:56:16	23:00:12	23:00:12	15:13:41	-5.722	21.820	60
07/13/16	W*	3:06:18	3:36:01	4:01:57	4:47:29	5:22:42	8:35:58	12:59:02	17:22:24	20:34:54	21:10:00	21:55:20	23:00:00	23:00:00	15:12:12	-5.836	21.671	69
07/14/16	Th*	3:07:54	3:37:21	4:03:00	4:48:28	5:23:34	8:35:16	12:59:09	17:23:19	20:34:14	21:09:13	21:54:22	23:00:00	23:00:00	15:10:40	-5.941	21.517	78
07/15/16	F*	3:09:33	3:38:43	4:04:19	4:49:27	5:24:27	8:34:32	12:59:14	17:24:15	20:33:31	21:08:25	21:53:20	23:00:00	23:00:00	15:09:05	-6.038	21.356	85
07/16/16	Sat*	3:11:13	3:40:06	4:05:32	4:50:27	5:25:21	8:33:46	12:59:20	17:25:13	20:32:47	21:07:33	21:52:16	23:00:00	23:00:00	15:07:26	-6.126	21.190	92
07/17/16	Sun*	3:12:55	3:41:31	4:06:46	4:51:29	5:26:16	8:32:58	12:59:24	17:26:11	20:32:00	21:06:40	21:51:10	23:00:00	23:00:00	15:05:44	-6.205	21.017	96
07/18/16	M*	3:14:38	3:42:57	4:08:02	4:52:32	5:27:12	8:32:07	12:59:29	17:27:11	20:31:12	21:05:45	21:50:02	23:00:00	23:00:00	15:04:00	-6.275	20.838	99
07/19/16	Tu*	3:16:22	3:44:25	4:09:19	4:53:36	5:28:09	8:31:15	12:59:32	17:28:11	20:30:21	21:04:47	21:48:51	23:00:00	23:00:00	15:02:12	-6.336	20.654	100
07/20/16	W*	3:18:08	3:45:54	4:10:37	4:54:41	5:29:07	8:30:20	12:59:35	17:29:13	20:29:29	21:03:47	21:47:38	23:00:00	23:00:00	15:00:22	-6.388	20.464	98
07/21/16	Th*	3:19:54	3:47:24	4:11:56	4:55:47	5:30:06	8:29:23	12:59:38	17:30:16	20:28:34	21:02:45	21:46:23	23:00:00	23:00:00	14:58:28	-6.430	20.268	95
07/22/16	F*	3:21:42	3:48:55	4:13:16	4:56:54	5:31:06	8:28:24	12:59:40	17:31:19	20:27:38	21:01:42	21:45:05	23:00:00	23:00:00	14:56:32	-6.462	20.066	88
07/23/16	Sat*	3:23:30	3:50:27	4:14:37	4:58:02	5:32:06	8:27:23	12:59:41	17:32:23	20:26:39	21:00:36	21:43:46	23:00:00	23:00:00	14:			

Date	DoW	Begin	Begin	Begin	Begin	Sunrise	Sun East	Local Noon	Sun West	Sunset	End Civil	End Nautical	End 15-deg.	End Astro-nomical	Length of Day	Neon	Neon	9 PM
		Astro-nomical Twilight	15-deg. Twilight	Nautical Twilight	Civil Twilight											Eqn Time (min.)	sun declination (deg.)	
08/16/16	Tu*	4:07:18	4:28:48	4:49:08	5:27:23	5:58:35	7:54:37	12:57:18	18:00:36	19:55:14	20:26:18	21:04:22	21:24:34	21:45:52	13:56:39	-4.102	13.413	98
08/17/16	W*	4:09:02	4:30:21	4:50:34	5:28:38	5:59:44	7:52:58	12:57:05	18:01:49	19:53:39	20:24:37	21:02:30	21:22:34	21:43:42	13:53:55	-3.883	13.092	100
08/18/16	Th*	4:10:46	4:31:55	4:51:59	5:29:53	6:00:52	7:51:17	12:56:51	18:03:02	19:52:03	20:22:55	21:00:37	21:20:33	21:41:32	13:51:11	-3.655	12.768	99
08/19/16	F*	4:12:29	4:33:28	4:53:25	5:31:08	6:02:01	7:49:36	12:56:37	18:04:16	19:50:26	20:21:11	20:58:43	21:18:32	21:39:21	13:48:25	-3.419	12.440	96
08/20/16	Sat*	4:14:11	4:35:00	4:54:50	5:32:23	6:03:10	7:47:54	12:56:23	18:05:30	19:48:48	20:19:27	20:56:49	21:16:31	21:37:11	13:45:38	-3.176	12.109	90
08/21/16	Sun*	4:15:52	4:36:32	4:56:15	5:33:37	6:04:18	7:46:10	12:56:08	18:06:43	19:47:09	20:17:43	20:54:54	21:14:29	21:35:00	13:42:50	-2.925	11.775	82
08/22/16	M*	4:17:33	4:38:04	4:57:39	5:34:52	6:05:27	7:44:21	12:55:52	18:07:57	19:45:29	20:15:57	20:52:59	21:12:27	21:32:48	13:40:02	-2.667	11.437	73
08/23/16	Tu*	4:19:13	4:39:35	4:59:03	5:36:06	6:06:36	7:42:46	12:55:36	18:09:11	19:43:48	20:14:11	20:51:03	21:10:24	21:30:37	13:37:12	-2.401	11.097	62
08/24/16	W*	4:20:52	4:41:05	5:00:27	5:37:20	6:07:45	7:40:55	12:55:20	18:10:24	19:42:07	20:12:24	20:49:07	21:08:22	21:28:26	13:34:22	-2.130	10.754	50
08/25/16	Th*	4:22:30	4:42:35	5:01:50	5:38:35	6:08:53	7:39:08	12:55:03	18:11:38	19:40:25	20:10:37	20:47:10	21:06:18	21:26:15	13:31:31	-1.851	10.408	39
08/26/16	F*	4:24:08	4:44:05	5:03:14	5:39:49	6:10:02	7:37:21	12:54:46	18:12:52	19:38:42	20:08:49	20:45:13	21:04:15	21:24:03	13:28:40	-1.566	10.059	29
08/27/16	Sat*	4:25:45	4:45:34	5:04:36	5:41:02	6:11:11	7:35:32	12:54:29	18:14:06	19:36:58	20:07:00	20:43:16	21:02:12	21:21:52	13:25:47	-1.276	9.707	19
08/28/16	Sun*	4:27:21	4:47:02	5:05:59	5:42:16	6:12:20	7:33:43	12:54:11	18:15:19	19:35:14	20:05:11	20:41:18	21:00:08	21:19:41	13:22:54	-0.979	9.353	11
08/29/16	M*	4:28:56	4:48:30	5:07:21	5:43:30	6:13:28	7:31:53	12:53:53	18:16:33	19:33:29	20:03:21	20:39:20	20:58:04	21:17:30	13:20:00	-0.677	8.996	5
08/30/16	Tu*	4:30:31	4:49:57	5:08:42	5:44:43	6:14:37	7:30:03	12:53:34	18:17:47	19:31:43	20:01:31	20:37:22	20:56:01	21:15:19	13:17:06	-0.370	8.637	2
08/31/16	W*	4:32:05	4:51:24	5:10:03	5:45:56	6:15:46	7:28:12	12:53:16	18:19:01	19:29:57	19:59:41	20:35:24	20:53:57	21:13:08	13:14:11	-0.058	8.276	0
09/01/16	Th*	4:33:38	4:52:50	5:11:24	5:47:09	6:16:55	7:26:20	12:52:57	18:20:15	19:28:10	19:57:50	20:33:25	20:51:53	21:10:58	13:11:16	0.260	7.912	1
09/02/16	F*	4:35:11	4:54:16	5:12:45	5:48:22	6:18:03	7:24:28	12:52:37	18:21:29	19:26:23	19:55:58	20:31:26	20:49:49	21:08:47	13:08:20	0.582	7.547	3
09/03/16	Sat*	4:36:42	4:55:41	5:14:05	5:49:35	6:19:12	7:22:35	12:52:18	18:22:43	19:24:35	19:54:07	20:29:28	20:47:45	21:06:37	13:05:24	0.908	7.179	7
09/04/16	Sun*	4:38:13	4:57:06	5:15:24	5:50:47	6:20:20	7:20:42	12:51:58	18:23:57	19:22:47	19:52:15	20:27:29	20:45:41	21:04:27	13:02:27	1.239	6.809	13
09/05/16	M*	4:39:43	4:58:30	5:16:43	5:51:59	6:21:29	7:18:48	12:51:38	18:25:11	19:20:58	19:50:22	20:25:30	20:43:38	21:02:17	12:59:30	1.574	6.438	20
09/06/16	Tu*	4:41:13	4:59:53	5:18:02	5:53:12	6:22:37	7:16:54	12:51:17	18:26:24	19:19:09	19:48:30	20:23:31	20:41:34	21:00:08	12:56:32	1.913	6.064	28
09/07/16	W*	4:42:42	5:01:16	5:19:21	5:54:24	6:23:46	7:15:00	12:50:57	18:27:38	19:17:20	19:46:37	20:21:32	20:39:30	20:57:59	12:53:34	2.255	5.689	37
09/08/16	Th*	4:44:10	5:02:39	5:20:39	5:55:35	6:24:55	7:13:05	12:50:36	18:28:52	19:15:30	19:44:44	20:19:32	20:37:27	20:55:50	12:50:36	2.600	5.313	47
09/09/16	F*	4:45:37	5:04:01	5:21:56	5:56:47	6:26:03	7:11:09	12:50:15	18:30:06	19:13:40	19:42:51	20:17:33	20:35:24	20:53:41	12:47:37	2.948	4.935	56
09/10/16	Sat*	4:47:03	5:05:22	5:23:13	5:57:58	6:27:11	7:09:13	12:49:54	18:31:20	19:11:50	19:40:57	20:15:35	20:33:21	20:51:33	12:44:38	3.298	4.556	66
09/11/16	Sun*	4:48:29	5:06:43	5:24:30	5:59:10	6:28:20	7:07:17	12:49:33	18:32:34	19:09:59	19:39:04	20:13:36	20:31:18	20:49:26	12:41:39	3.651	4.175	75
09/12/16	M*	4:49:55	5:08:05	5:25:47	6:00:21	6:29:28	7:05:21	12:49:12	18:33:48	19:08:08	19:37:11	20:11:37	20:29:16	20:47:19	12:38:39	4.005	3.793	84
09/13/16	Tu*	4:51:19	5:09:23	5:27:03	6:01:32	6:30:37	7:03:24	12:48:51	18:35:02	19:06:17	19:35:17	20:09:39	20:27:14	20:45:12	12:35:40	4.361	3.410	91
09/14/16	W*	4:52:43	5:10:42	5:28:19	6:02:43	6:31:46	7:01:28	12:48:29	18:36:17	19:04:25	19:33:23	20:07:40	20:25:12	20:43:06	12:32:40	4.719	3.026	96
09/15/16	Th*	4:54:06	5:12:01	5:29:34	6:03:54	6:32:54	6:59:31	12:48:08	18:37:31	19:02:34	19:31:30	20:05:42	20:23:11	20:41:00	12:29:40	5.077	2.641	99
09/16/16	F*	4:55:29	5:13:20	5:30:49	6:05:04	6:34:03	6:57:34	12:47:46	18:38:45	19:00:43	19:29:36	20:03:44	20:21:10	20:38:55	12:26:40	5.435	2.256	100
09/17/16	Sat*	4:56:51	5:14:38	5:32:04	6:06:15	6:35:12	6:55:36	12:47:25	18:40:00	18:58:51	19:27:43	20:01:47	20:19:09	20:36:51	12:23:39	5.793	1.869	97
09/18/16	Sun*	4:58:13	5:15:55	5:33:19	6:07:25	6:36:21	6:53:39	12:47:03	18:41:14	18:56:59	19:25:50	19:59:50	20:17:09	20:34:47	12:20:39	6.151	1.482	92
09/19/16	M*	4:59:34	5:17:13	5:34:33	6:08:36	6:37:29	6:51:42	12:46:42	18:42:29	18:55:08	19:23:57	19:57:53	20:15:09	20:32:44	12:17:38	6.508	1.094	85
09/20/16	Tu*	5:00:54	5:18:30	5:35:47	6:09:46	6:38:39	6:49:44	12:46:20	18:43:44	18:53:16	19:22:04	19:55:57	20:13:10	20:30:41	12:14:37	6.864	0.706	75
09/21/16	W*	5:02:14	5:19:46	5:37:01	6:10:57	6:39:48	6:47:47	12:45:59	18:44:59	18:51:24	19:20:11	19:54:01	20:11:12	20:28:39	12:11:37	7.218	0.317	65
09/22/16	Th*	5:03:34	5:21:02	5:38:15	6:12:07	6:40:57	6:45:50	12:45:38	18:46:15	18:49:33	19:18:19	19:52:05	20:09:14	20:26:38	12:08:36	7.570	-0.072	53
09/23/16	F*	5:04:53	5:22:18	5:39:28	6:13:18	6:42:07	6:43:52	12:45:17	18:47:30	18:47:42	19:16:26	19:50:10	20:07:16	20:24:37	12:05:35	7.920	-0.461	42
09/24/16	Sat*	5:06:12	5:23:34	5:40:42	6:14:28	6:43:17		12:44:56		18:45:50	19:14:35	19:48:16	20:05:20	20:22:38	12:02:34	8.267	-0.850	32
09/25/16	Sun*	5:07:30	5:24:49	5:41:55	6:15:39	6:44:27		12:44:36		18:43:59	19:12:43	19:46:22	20:03:24	20:20:39	11:59:33	8.610	-1.239	22
09/26/16	M*	5:08:48	5:26:04	5:43:08	6:16:50	6:45:37		12:44:15		18:42:09	19:10:52	19:44:28	20:01:28	20:18:41	11:56:32	8.951	-1.629	14
09/27/16	Tu*	5:10:05	5:27:19	5:44:21	6:18:00	6:46:47		12:43:55		18:40:18	19:09:01	19:42:35	19:59:33	20:16:43	11:53:31	9.288	-2.018	8
09/28/16	W*	5:11:22	5:28:34	5:45:33	6:19:11	6:47:58		12:43:35		18:38:28	19:07:11	19:40:43	19:57:39	20:14:47	11:50:30	9.621	-2.407	3
09/29/16	Th*	5:12:39	5:29:48	5:46:46	6:20:22	6:49:08		12:43:15		18:36:38	19:05:21	19:38:52	19:55:46	20:12:51	11:47:29	9.949	-2.795	1
09/30/16	F*	5:13:56	5:31:02	5:47:58	6:21:32	6:50:19		12:42:56		18:34:48	19:03:31	19:37:01	19:53:54	20:10:57	11:44:29	10.274	-3.183	0
10/01/16	Sat*	5:15:12	5:32:16	5:49:11	6:22:43	6:51:31		12:42:37		18:32:59	19:01:43	19:35:10	19:52:02	20:09:03	11:41:28	10.593	-3.571	1
10/02/16	Sun*	5:16:27	5:33:30	5:50:23	6:23:54	6:52:42		12:42:18		18:31:10	18:59:54	19:33:21	19:50:11	20:07:10	11:38:28	10.907	-3.958	4
10/03/16	M*	5:17:43	5:34:43	5:51:35	6:25:05	6:53:54		12:41:59		18:29:21	18:58:06	19:31:32	19:48:21	20:05:18	11:35:27	11.216	-4.344	9
10/04/16	Tu*	5:18:58	5:35:56	5:52:47	6:26:17	6:55:06		12:41:41		18:27:33	18:56:19	19:29:44	19:46:32	20:03:28	11:32:27	11.519	-4.729	15
10/05/16	W*	5:20:12	5:37:09	5:53:59	6:27:28	6:56:18		12:41:23		18:25:45	18:54:32	19:27:57	19:44:44	20:01:38	11:29:27	11.816	-5.113	22
10/06/16	Th*	5:21:27	5:38:22	5:55:11	6:28:39	6:57:30		12:41:06		18:23:58	18:52:46	19:26:11	19:42:57	19:59:49	11:26:28	12.107	-5.496	31
10/07/16	F*	5:22:41	5:39:35	5:56:23	6:29:51	6:58:43		12:40:49		18:22:12	18:51:01	19:24:25	19:41:10	19:58:01	11:23:28	12.392	-5.878	40
10/08/16	Sat*	5:23:55	5:40:47	5:57:34	6:31:02	6:59:56		12:40:32		18:20:26	18:49:17	19:22:41	19:39:25	19:56:15	11:20:29	12.670	-6.259	

HVO -103.297529, 44.108178, Time Zone = MST/MDT

Date	DoW	Begin	Begin	Begin	Begin	Sunrise	Sun East	Local Noon	Sun West	Sunset	End	End 15-	End	Length of Day	Noon	Noon	9 PM	
		Astro-nomical Twilight	15-deg. Twilight	Nautical Twilight	Civil Twilight						End Civil	deg. Twilight	Astro-nomical Twilight		Eqn Time (min.)	sun declination (deg.)		Lunar Illum. (pct.)
10/31/16	M*	5:51:28	6:08:14	6:25:06	6:59:13	7:29:16		12:36:47		17:43:44	18:13:45	18:47:51	19:04:41	19:21:26	10:14:28	16.415	-14.421	2
11/01/16	Tu*	5:52:38	6:09:25	6:26:18	7:00:29	7:30:36		12:36:46		17:42:23	18:12:28	18:46:37	19:03:28	19:20:14	10:11:47	16.436	-14.739	5
11/02/16	W*	5:53:49	6:10:36	6:27:30	7:01:44	7:31:55		12:36:46		17:41:02	18:11:12	18:45:25	19:02:17	19:19:03	10:09:07	16.443	-15.054	10
11/03/16	Th*	5:54:59	6:11:47	6:28:42	7:02:59	7:33:15		12:36:46		17:39:44	18:09:58	18:44:14	19:01:08	19:17:55	10:06:28	16.436	-15.364	17
11/04/16	F*	5:56:09	6:12:58	6:29:54	7:04:15	7:34:35		12:36:47		17:38:27	18:08:46	18:43:05	19:00:00	19:16:48	10:03:51	16.416	-15.670	24
11/05/16	Sat*	5:57:19	6:14:09	6:31:05	7:05:30	7:35:55		12:36:49		17:37:11	18:07:35	18:41:58	18:58:54	19:15:43	10:01:16	16.383	-15.972	33
11/06/16	Sun	4:58:28	5:15:19	5:32:17	6:06:46	6:37:15		11:36:52		16:35:57	17:06:26	17:40:53	17:57:50	18:14:39	9:58:14	16.336	-16.269	43
11/07/16	M	4:59:38	5:16:29	5:33:29	6:08:01	6:38:35		11:36:56		16:34:45	17:05:18	17:39:49	17:56:47	18:13:38	9:56:10	16.275	-16.562	54
11/08/16	Tu	5:00:47	5:17:39	5:34:40	6:09:16	6:39:55		11:37:00		16:33:34	17:04:13	17:38:47	17:55:47	18:12:38	9:53:39	16.201	-16.850	64
11/09/16	W	5:01:56	5:18:49	5:35:51	6:10:31	6:41:15		11:37:06		16:32:26	17:03:09	17:37:47	17:54:48	18:11:41	9:51:11	16.112	-17.134	74
11/10/16	Th	5:03:04	5:19:59	5:37:02	6:11:46	6:42:35		11:37:12		16:31:19	17:02:07	17:36:49	17:53:52	18:10:45	9:48:44	16.010	-17.412	84
11/11/16	F	5:04:13	5:21:08	5:38:13	6:13:01	6:43:54		11:37:19		16:30:14	17:01:06	17:35:53	17:52:57	18:09:51	9:46:19	15.894	-17.686	91
11/12/16	Sat	5:05:21	5:22:17	5:39:23	6:14:15	6:45:14		11:37:26		16:29:10	17:00:08	17:34:59	17:52:04	18:09:00	9:43:56	15.764	-17.954	97
11/13/16	Sun	5:06:29	5:23:26	5:40:34	6:15:29	6:46:33		11:37:35		16:28:09	16:59:12	17:34:06	17:51:13	18:08:10	9:41:36	15.621	-18.217	100
11/14/16	M	5:07:36	5:24:35	5:41:44	6:16:43	6:47:52		11:37:45		16:27:10	16:58:17	17:33:16	17:50:24	18:07:22	9:39:18	15.463	-18.475	99
11/15/16	Tu	5:08:43	5:25:43	5:42:53	6:17:57	6:49:10		11:37:55		16:26:12	16:57:25	17:32:28	17:49:37	18:06:37	9:37:02	15.291	-18.727	96
11/16/16	W	5:09:50	5:26:51	5:44:02	6:19:10	6:50:29		11:38:06		16:25:17	16:56:35	17:31:41	17:48:53	18:05:53	9:34:48	15.105	-18.974	90
11/17/16	Th	5:10:56	5:27:58	5:45:11	6:20:23	6:51:47		11:38:18		16:24:24	16:55:46	17:30:57	17:48:10	18:05:11	9:32:37	14.904	-19.215	82
11/18/16	F	5:12:02	5:29:05	5:46:20	6:21:36	6:53:04		11:38:31		16:23:32	16:55:00	17:30:15	17:47:29	18:04:32	9:30:28	14.690	-19.451	73
11/19/16	Sat	5:13:07	5:30:12	5:47:28	6:22:48	6:54:21		11:38:45		16:22:43	16:54:16	17:29:35	17:46:51	18:03:55	9:28:22	14.462	-19.681	62
11/20/16	Sun	5:14:12	5:31:18	5:48:35	6:23:59	6:55:37		11:38:59		16:21:57	16:53:34	17:28:57	17:46:15	18:03:20	9:26:14	14.220	-19.904	52
11/21/16	M	5:15:17	5:32:23	5:49:43	6:25:10	6:56:53		11:39:14		16:21:12	16:52:55	17:28:22	17:45:40	18:02:47	9:24:19	13.964	-20.122	42
11/22/16	Tu	5:16:21	5:33:29	5:50:49	6:26:21	6:58:09		11:39:31		16:20:30	16:52:17	17:27:48	17:45:08	18:02:16	9:22:21	13.694	-20.334	32
11/23/16	W	5:17:24	5:34:33	5:51:55	6:27:31	6:59:23		11:39:48		16:19:50	16:51:42	17:27:17	17:44:39	18:01:47	9:20:27	13.411	-20.539	24
11/24/16	Th	5:18:27	5:35:37	5:53:00	6:28:40	7:00:37		11:40:05		16:19:12	16:51:09	17:26:48	17:44:11	18:01:21	9:18:35	13.115	-20.738	16
11/25/16	F	5:19:29	5:36:40	5:54:05	6:29:48	7:01:50		11:40:24		16:18:37	16:50:38	17:26:21	17:43:45	18:00:56	9:16:47	12.807	-20.931	10
11/26/16	Sat	5:20:30	5:37:43	5:55:09	6:30:56	7:03:02		11:40:43		16:18:04	16:50:10	17:25:56	17:43:22	18:00:34	9:15:02	12.485	-21.117	5
11/27/16	Sun	5:21:31	5:38:45	5:56:12	6:32:03	7:04:13		11:41:03		16:17:34	16:49:44	17:25:34	17:43:01	18:00:14	9:13:20	12.152	-21.296	2
11/28/16	M	5:22:31	5:39:46	5:57:14	6:33:09	7:05:24		11:41:24		16:17:06	16:49:20	17:25:14	17:42:42	17:59:57	9:11:42	11.807	-21.469	0
11/29/16	Tu	5:23:30	5:40:46	5:58:16	6:34:14	7:06:33		11:41:45		16:16:40	16:48:59	17:24:56	17:42:26	17:59:41	9:10:07	11.450	-21.635	1
11/30/16	W	5:24:28	5:41:45	5:59:17	6:35:18	7:07:41		11:42:07		16:16:17	16:48:40	17:24:40	17:42:12	17:59:28	9:08:36	11.082	-21.794	3
12/01/16	Th	5:25:26	5:42:44	6:00:16	6:36:21	7:08:48		11:42:30		16:15:56	16:48:23	17:24:27	17:41:59	17:59:17	9:07:09	10.703	-21.947	7
12/02/16	F	5:26:22	5:43:41	6:01:15	6:37:22	7:09:53		11:42:53		16:15:38	16:48:09	17:24:16	17:41:49	17:59:08	9:05:45	10.314	-22.092	12
12/03/16	Sat	5:27:18	5:44:37	6:02:12	6:38:23	7:10:57		11:43:17		16:15:23	16:47:57	17:24:07	17:41:42	17:59:01	9:04:25	9.915	-22.230	19
12/04/16	Sun	5:28:12	5:45:33	6:03:09	6:39:22	7:12:00		11:43:42		16:15:10	16:47:47	17:24:00	17:41:36	17:58:57	9:03:09	9.507	-22.361	28
12/05/16	M	5:29:06	5:46:27	6:04:04	6:40:20	7:13:02		11:44:07		16:14:59	16:47:40	17:23:56	17:41:33	17:58:54	9:01:57	9.090	-22.484	37
12/06/16	Tu	5:29:58	5:47:20	6:04:58	6:41:17	7:14:01		11:44:32		16:14:51	16:47:35	17:23:54	17:41:32	17:58:54	9:00:50	8.664	-22.601	48
12/07/16	W	5:30:49	5:48:12	6:05:51	6:42:12	7:15:00		11:44:58		16:14:46	16:47:33	17:23:54	17:41:33	17:58:56	8:59:46	8.230	-22.710	59
12/08/16	Th	5:31:39	5:49:03	6:06:42	6:43:06	7:15:56		11:45:25		16:14:43	16:47:33	17:23:56	17:41:36	17:59:00	8:58:46	7.789	-22.811	69
12/09/16	F	5:32:27	5:49:52	6:07:33	6:43:58	7:16:51		11:45:52		16:14:42	16:47:35	17:24:01	17:41:42	17:59:06	8:57:51	7.341	-22.905	80
12/10/16	Sat	5:33:15	5:50:40	6:08:21	6:44:49	7:17:44		11:46:19		16:14:45	16:47:40	17:24:08	17:41:49	17:59:14	8:56:47	6.886	-22.992	88
12/11/16	Sun	5:34:01	5:51:26	6:09:09	6:45:38	7:18:36		11:46:47		16:14:50	16:47:47	17:24:17	17:41:59	17:59:24	8:56:14	6.425	-23.070	95
12/12/16	M	5:34:45	5:52:11	6:09:54	6:46:26	7:19:25		11:47:15		16:14:57	16:47:57	17:24:28	17:42:11	17:59:37	8:55:32	5.958	-23.142	99
12/13/16	Tu	5:35:28	5:52:55	6:10:38	6:47:11	7:20:13		11:47:43		16:15:07	16:48:08	17:24:41	17:42:24	17:59:51	8:54:54	5.486	-23.205	100
12/14/16	W	5:36:10	5:53:37	6:11:21	6:47:55	7:20:58		11:48:12		16:15:19	16:48:22	17:24:57	17:42:40	18:00:07	8:54:21	5.009	-23.261	98
12/15/16	Th	5:36:50	5:54:18	6:12:02	6:48:38	7:21:42		11:48:41		16:15:34	16:48:39	17:25:14	17:42:58	18:00:26	8:53:52	4.528	-23.309	93
12/16/16	F	5:37:29	5:54:57	6:12:42	6:49:18	7:22:23		11:49:10		16:15:52	16:48:58	17:25:34	17:43:19	18:00:46	8:53:29	4.043	-23.350	87
12/17/16	Sat	5:38:06	5:55:34	6:13:19	6:49:56	7:23:03		11:49:39		16:16:12	16:49:19	17:25:56	17:43:41	18:01:09	8:53:09	3.554	-23.382	78
12/18/16	Sun	5:38:42	5:56:10	6:13:55	6:50:33	7:23:40		11:50:09		16:16:35	16:49:42	17:26:20	17:44:05	18:01:33	8:52:54	3.062	-23.407	69
12/19/16	M	5:39:16	5:56:44	6:14:29	6:51:08	7:24:15		11:50:38		16:17:00	16:50:08	17:26:46	17:44:31	18:01:59	8:52:44	2.568	-23.424	59
12/20/16	Tu	5:39:48	5:57:16	6:15:02	6:51:40	7:24:48		11:51:08		16:17:27	16:50:35	17:27:14	17:44:59	18:02:28	8:52:39	2.072	-23.433	49
12/21/16	W	5:40:18	5:57:47	6:15:32	6:52:11	7:25:19		11:51:38		16:17:57	16:51:05	17:27:44	17:45:29	18:02:58	8:52:38	1.575	-23.434	40
12/22/16	Th	5:40:47	5:58:16	6:16:01	6:52:39	7:25:47		11:52:08		16:18:29	16:51:37	17:28:16	17:46:01	18:03:29	8:52:42	1.077	-23.427	31
12/23/16	F	5:41:14	5:58:43	6:16:28	6:53:06	7:26:13		11:52:38		16:19:04	16:52:12	17:28:49	17:46:35	18:04:03	8:52:51	0.579	-23.413	22
12/24/16	Sat	5:41:39	5:59:08	6:16:53	6:53:30	7:26:37		11:53:07		16:19:41	16:52:48	17:29:25	17:47:10	18:04:39	8:53:04	0.081	-23.391	15
12/25/16	Sun	5:42:03	5:59:31	6:17:16	6:53:52	7:26:58		11:53:37		16:20:20	16:53:26	17:30:03	17:47:48	18:05:16	8:53:22	-0.415	-23.361	9
12/26/16	M	5:42:24	5:59:52	6:17:36	6:54:12	7:27:17		11:54:07		16:21:02	16:54:06	17:30:42	17:48:27	18:05:54	8:53:45	-0.910	-23.323	4
12/																		

Date	DoW	Begin	Begin	Begin	Begin	Sunrise	Sun	Local	Sun	Sunset	End	End 15-	End	Length	Noon	Noon	9 PM	
		Astro- nomical Twilight	15-deg. Twilight	Nautical Twilight	Civil Twilight		East	Noon	West		End Civil	Nautical	deg. Twilight		Astro- nomical Twilight	Eqn Time		sun decli- nation (deg.)
01/15/17	Sun	5:42:23	5:59:35	6:16:59	6:52:43	7:24:45		12:02:46		16:41:08	17:13:10	17:48:55	18:06:20	18:23:32	9:16:23	-9.581	-20.976	84
01/16/17	M	5:42:01	5:59:11	6:16:34	6:52:14	7:24:12		12:03:06		16:42:23	17:14:21	17:50:01	18:07:25	18:24:35	9:18:11	-9.919	-20.783	76
01/17/17	Tu	5:41:36	5:58:45	6:16:07	6:51:43	7:23:36		12:03:26		16:43:38	17:15:32	17:51:08	18:08:31	18:25:40	9:20:03	-10.245	-20.585	67
01/18/17	W	5:41:09	5:58:17	6:15:38	6:51:10	7:22:58		12:03:45		16:44:55	17:16:44	17:52:16	18:09:37	18:26:45	9:21:58	-10.560	-20.379	57
01/19/17	Th	5:40:41	5:57:47	6:15:06	6:50:34	7:22:17		12:04:03		16:46:12	17:17:56	17:53:25	18:10:44	18:27:51	9:23:55	-10.863	-20.167	48
01/20/17	F	5:40:10	5:57:15	6:14:32	6:49:56	7:21:35		12:04:21		16:47:31	17:19:09	17:54:34	18:11:52	18:28:58	9:25:56	-11.154	-19.949	38
01/21/17	Sat	5:39:36	5:56:41	6:13:57	6:49:16	7:20:50		12:04:37		16:48:50	17:20:23	17:55:44	18:13:01	18:30:05	9:28:00	-11.432	-19.725	30
01/22/17	Sun	5:39:01	5:56:04	6:13:19	6:48:34	7:20:03		12:04:53		16:50:09	17:21:38	17:56:55	18:14:10	18:31:13	9:30:06	-11.698	-19.494	21
01/23/17	M	5:38:24	5:55:26	6:12:39	6:47:50	7:19:14		12:05:08		16:51:29	17:22:53	17:58:06	18:15:19	18:32:22	9:32:16	-11.951	-19.258	14
01/24/17	Tu	5:37:45	5:54:45	6:11:56	6:47:04	7:18:22		12:05:23		16:52:50	17:24:09	17:59:18	18:16:30	18:33:31	9:34:28	-12.192	-19.015	8
01/25/17	W	5:37:03	5:54:02	6:11:12	6:46:16	7:17:29		12:05:37		16:54:11	17:25:25	18:00:30	18:17:40	18:34:40	9:36:42	-12.419	-18.767	4
01/26/17	Th	5:36:20	5:53:18	6:10:26	6:45:26	7:16:34		12:05:49		16:55:33	17:26:42	18:01:42	18:18:51	18:35:50	9:38:59	-12.633	-18.513	1
01/27/17	F	5:35:34	5:52:31	6:09:38	6:44:33	7:15:36		12:06:01		16:56:55	17:27:59	18:02:55	18:20:03	18:37:01	9:41:18	-12.834	-18.253	0
01/28/17	Sat	5:34:47	5:51:42	6:08:48	6:43:39	7:14:37		12:06:13		16:58:17	17:29:16	18:04:08	18:21:15	18:38:11	9:43:40	-13.021	-17.988	1
01/29/17	Sun	5:33:57	5:50:52	6:07:56	6:42:43	7:13:36		12:06:23		16:59:40	17:30:34	18:05:22	18:22:27	18:39:23	9:46:04	-13.195	-17.718	5
01/30/17	M	5:33:05	5:49:59	6:07:02	6:41:45	7:12:33		12:06:33		17:01:03	17:31:52	18:06:36	18:23:39	18:40:34	9:48:30	-13.355	-17.442	11
01/31/17	Tu	5:32:12	5:49:05	6:06:06	6:40:45	7:11:28		12:06:41		17:02:26	17:33:10	18:07:50	18:24:52	18:41:46	9:50:58	-13.501	-17.161	19
02/01/17	W	5:31:16	5:48:08	6:05:08	6:39:43	7:10:21		12:06:49		17:03:49	17:34:28	18:09:05	18:26:05	18:42:58	9:53:28	-13.633	-16.876	28
02/02/17	Th	5:30:19	5:47:10	6:04:08	6:38:39	7:09:12		12:06:56		17:05:12	17:35:47	18:10:19	18:27:19	18:44:10	9:56:00	-13.752	-16.585	39
02/03/17	F	5:29:19	5:46:09	6:03:06	6:37:34	7:08:02		12:07:03		17:06:36	17:37:05	18:11:34	18:28:32	18:45:23	9:58:34	-13.856	-16.289	50
02/04/17	Sat	5:28:18	5:45:07	6:02:03	6:36:26	7:06:50		12:07:08		17:07:59	17:38:24	18:12:49	18:29:46	18:46:36	10:01:09	-13.947	-15.989	61
02/05/17	Sun	5:27:15	5:44:03	6:00:58	6:35:17	7:05:36		12:07:13		17:09:22	17:39:43	18:14:04	18:31:00	18:47:49	10:03:46	-14.023	-15.684	72
02/06/17	M	5:26:10	5:42:57	5:59:50	6:34:07	7:04:21		12:07:17		17:10:46	17:41:01	18:15:19	18:32:14	18:49:02	10:06:25	-14.086	-15.375	82
02/07/17	Tu	5:25:03	5:41:49	5:58:42	6:32:54	7:03:04		12:07:20		17:12:09	17:42:20	18:16:35	18:33:28	18:50:16	10:09:05	-14.136	-15.061	90
02/08/17	W	5:23:54	5:40:40	5:57:31	6:31:40	7:01:45		12:07:22		17:13:32	17:43:39	18:17:50	18:34:42	18:51:29	10:11:47	-14.172	-14.743	96
02/09/17	Th	5:22:44	5:39:29	5:56:19	6:30:25	7:00:26		12:07:23		17:14:56	17:44:58	18:19:06	18:35:57	18:52:43	10:14:30	-14.195	-14.421	99
02/10/17	F	5:21:32	5:38:16	5:55:05	6:29:08	6:59:04		12:07:24		17:16:19	17:46:16	18:20:21	18:37:11	18:53:57	10:17:15	-14.204	-14.096	100
02/11/17	Sat	5:20:18	5:37:02	5:53:50	6:27:49	6:57:41		12:07:23		17:17:42	17:47:35	18:21:37	18:38:26	18:55:11	10:20:00	-14.201	-13.766	98
02/12/17	Sun	5:19:02	5:35:45	5:52:33	6:26:29	6:56:17		12:07:23		17:19:04	17:48:54	18:22:52	18:39:41	18:56:26	10:22:47	-14.186	-13.432	95
02/13/17	M	5:17:45	5:34:28	5:51:14	6:25:08	6:54:51		12:07:21		17:20:27	17:50:12	18:24:08	18:40:56	18:57:40	10:25:35	-14.157	-13.095	89
02/14/17	Tu	5:16:26	5:33:08	5:49:54	6:23:45	6:53:25		12:07:18		17:21:49	17:51:31	18:25:24	18:42:11	18:58:55	10:28:25	-14.117	-12.754	82
02/15/17	W	5:15:05	5:31:48	5:48:33	6:22:21	6:51:57		12:07:15		17:23:12	17:52:49	18:26:40	18:43:26	19:00:10	10:31:15	-14.065	-12.410	74
02/16/17	Th	5:13:43	5:30:25	5:47:10	6:20:55	6:50:27		12:07:12		17:24:34	17:54:08	18:27:56	18:44:41	19:01:25	10:34:06	-14.002	-12.062	65
02/17/17	F	5:12:20	5:29:02	5:45:45	6:19:28	6:48:57		12:07:07		17:25:55	17:55:26	18:29:12	18:45:57	19:02:41	10:36:59	-13.927	-11.711	56
02/18/17	Sat	5:10:54	5:27:36	5:44:19	6:18:00	6:47:25		12:07:02		17:27:17	17:56:44	18:30:27	18:47:12	19:03:56	10:39:52	-13.840	-11.357	47
02/19/17	Sun	5:09:28	5:26:10	5:42:52	6:16:31	6:45:53		12:06:56		17:28:38	17:58:02	18:31:43	18:48:28	19:05:12	10:42:46	-13.743	-11.001	37
02/20/17	M	5:08:00	5:24:42	5:41:24	6:15:00	6:44:19		12:06:50		17:30:00	17:59:20	18:32:59	18:49:44	19:06:28	10:45:41	-13.635	-10.641	28
02/21/17	Tu	5:06:30	5:23:12	5:39:54	6:13:29	6:42:44		12:06:42		17:31:21	18:00:38	18:34:15	18:50:59	19:07:44	10:48:36	-13.517	-10.278	20
02/22/17	W	5:04:59	5:21:41	5:38:23	6:11:56	6:41:08		12:06:35		17:32:41	18:01:56	18:35:31	18:52:15	19:09:00	10:51:33	-13.389	-9.913	13
02/23/17	Th	5:03:26	5:20:09	5:36:51	6:10:22	6:39:32		12:06:26		17:34:02	18:03:13	18:36:48	18:53:31	19:10:16	10:54:30	-13.250	-9.545	7
02/24/17	F	5:01:53	5:18:36	5:35:18	6:08:47	6:37:54		12:06:18		17:35:22	18:04:31	18:38:04	18:54:47	19:11:33	10:57:28	-13.102	-9.175	2
02/25/17	Sat	5:00:18	5:17:01	5:33:43	6:07:11	6:36:16		12:06:08		17:36:41	18:05:48	18:39:20	18:56:04	19:12:50	11:00:26	-12.944	-8.803	0
02/26/17	Sun	4:58:41	5:15:25	5:32:07	6:05:35	6:34:36		12:05:58		17:38:01	18:07:05	18:40:36	18:57:20	19:14:07	11:03:25	-12.776	-8.428	0
02/27/17	M	4:57:03	5:13:48	5:30:31	6:03:57	6:32:56		12:05:47		17:39:20	18:08:22	18:41:52	18:58:36	19:15:24	11:06:24	-12.600	-8.052	3
02/28/17	Tu	4:55:24	5:12:10	5:28:53	6:02:18	6:31:15		12:05:36		17:40:39	18:09:39	18:43:08	18:59:53	19:16:41	11:09:24	-12.414	-7.673	8
03/01/17	W	4:53:44	5:10:31	5:27:14	6:00:38	6:29:34		12:05:25		17:41:58	18:10:56	18:44:24	19:01:10	19:17:59	11:12:24	-12.220	-7.293	15
03/02/17	Th	4:52:02	5:08:50	5:25:34	5:58:58	6:27:51		12:05:13		17:43:16	18:12:12	18:45:41	19:02:26	19:19:17	11:15:25	-12.018	-6.910	25
03/03/17	F	4:50:20	5:07:09	5:23:53	5:57:17	6:26:08		12:05:00		17:44:34	18:13:29	18:46:57	19:03:43	19:20:35	11:18:26	-11.807	-6.527	35
03/04/17	Sat	4:48:36	5:05:26	5:22:11	5:55:35	6:24:25		12:04:47		17:45:52	18:14:45	18:48:13	19:05:00	19:21:53	11:21:27	-11.589	-6.141	47
03/05/17	Sun	4:46:51	5:03:42	5:20:28	5:53:52	6:22:40		12:04:33		17:47:09	18:16:01	18:49:29	19:06:17	19:23:12	11:24:29	-11.362	-5.755	58
03/06/17	M	4:45:05	5:01:57	5:18:44	5:52:08	6:20:55		12:04:19		17:48:27	18:17:17	18:50:46	19:07:35	19:24:31	11:27:31	-11.129	-5.367	69
03/07/17	Tu	4:43:17	5:00:12	5:16:59	5:50:24	6:19:10		12:04:05		17:49:43	18:18:33	18:52:02	19:08:52	19:25:50	11:30:34	-10.888	-4.978	79
03/08/17	W	4:41:29	4:58:25	5:15:13	5:48:39	6:17:24		12:03:50		17:51:00	18:19:48	18:53:18	19:10:10	19:27:09	11:33:36	-10.641	-4.587	87
03/09/17	Th	4:39:39	4:56:37	5:13:27	5:46:53	6:15:37		12:03:35		17:52:16	18:21:04	18:54:35	19:11:27	19:28:29	11:36:39	-10.388	-4.196	93
03/10/17	F	4:37:49	4:54:49	5:11:40	5:45:07	6:13:50		12:03:19		17:53:32	18:22:19	18:55:51	19:12:45	19:29:49	11:39:42	-10.129	-3.804	98
03/11/17	Sat	4:35:58	4:52:59	5:09:52	5:43:20	6:12:03		12:03:03		17:54:48	18:23:35	18:57:08	19:14:03	19:31:09	11:42:45	-9.864	-3.412	100
03/12/17	Sun*	5:34:05	5:51:09	6:08:03	6:41:33	7:10:15		13:02:47		18:56:04	19:24:50	19:5						

HVO -103.297529, 44.108178, Time Zone = MST/MDT

Date	DoW	Begin	Begin	Begin	Begin	Sunrise	Sun	Local	Sun	Sunset	End Civil	End	End 15-	End	Length	Noon	Noon	9 PM
		Astro-nomical	15-deg.	Nautical	Civil		East	Noon	West		Twilight	Nautical	deg.	Astro-nomical		Eqn	sun declination	Lunar Illum.
04/01/17	Sat*	4:53:56	5:12:12	5:30:02	6:04:43	6:33:52	7:16:37	12:56:54	18:36:26	19:20:45	19:49:59	20:24:49	20:42:43	21:01:06	12:46:52	-3.714	4.834	32
04/02/17	Sun*	4:51:50	5:10:11	5:28:05	6:02:52	6:32:04	7:17:56	12:56:37	18:34:33	19:21:58	19:51:16	20:26:11	20:44:10	21:02:38	12:49:54	-3.420	5.218	43
04/03/17	M*	4:49:42	5:08:09	5:26:07	6:01:00	6:30:16	7:19:14	12:56:19	18:32:39	19:23:11	19:52:32	20:27:34	20:45:37	21:04:10	12:52:55	-3.128	5.601	54
04/04/17	Tu*	4:47:35	5:06:08	5:24:10	5:59:09	6:28:28	7:20:33	12:56:02	18:30:46	19:24:24	19:53:48	20:28:57	20:47:04	21:05:44	12:55:56	-2.838	5.982	65
04/05/17	W*	4:45:27	5:04:06	5:22:13	5:57:19	6:26:41	7:21:51	12:55:45	18:28:54	19:25:37	19:55:05	20:30:20	20:48:32	21:07:18	12:58:56	-2.551	6.361	75
04/06/17	Th*	4:43:19	5:02:03	5:20:15	5:55:28	6:24:54	7:23:10	12:55:28	18:27:02	19:26:50	19:56:22	20:31:44	20:50:01	21:08:52	13:01:56	-2.267	6.738	83
04/07/17	F*	4:41:11	5:00:01	5:18:18	5:53:38	6:23:07	7:24:28	12:55:11	18:25:10	19:28:03	19:57:39	20:33:07	20:51:30	21:10:28	13:04:55	-1.986	7.113	90
04/08/17	Sat*	4:39:02	4:57:59	5:16:21	5:51:48	6:21:21	7:25:46	12:54:54	18:23:19	19:29:16	19:58:55	20:34:32	20:53:00	21:12:04	13:07:54	-1.709	7.487	95
04/09/17	Sun*	4:36:53	4:55:56	5:14:23	5:49:58	6:19:36	7:27:04	12:54:38	18:21:28	19:30:28	20:00:13	20:35:57	20:54:30	21:13:41	13:10:53	-1.436	7.858	99
04/10/17	M*	4:34:44	4:53:54	5:12:26	5:48:08	6:17:51	7:28:22	12:54:22	18:19:38	19:31:41	20:01:30	20:37:22	20:56:00	21:15:18	13:13:50	-1.167	8.227	100
04/11/17	Tu*	4:32:34	4:51:52	5:10:30	5:46:20	6:16:06	7:29:41	12:54:06	18:17:49	19:32:54	20:02:47	20:38:47	20:57:31	21:16:57	13:16:48	-0.903	8.593	99
04/12/17	W*	4:30:25	4:49:49	5:08:33	5:44:31	6:14:22	7:30:59	12:53:50	18:16:00	19:34:07	20:04:05	20:40:13	20:59:03	21:18:36	13:19:44	-0.644	8.958	97
04/13/17	Th*	4:28:15	4:47:47	5:06:36	5:42:43	6:12:39	7:32:17	12:53:35	18:14:12	19:35:20	20:05:22	20:41:39	21:00:35	21:20:16	13:22:41	-0.391	9.319	92
04/14/17	F*	4:26:05	4:45:45	5:04:40	5:40:56	6:10:57	7:33:35	12:53:20	18:12:24	19:36:33	20:06:40	20:43:06	21:02:08	21:21:56	13:25:36	-0.143	9.679	87
04/15/17	Sat*	4:23:55	4:43:43	5:02:45	5:39:09	6:09:15	7:34:53	12:53:06	18:10:38	19:37:45	20:07:58	20:44:33	21:03:41	21:23:38	13:28:31	0.099	10.035	80
04/16/17	Easter*	4:21:46	4:41:41	5:00:49	5:37:22	6:07:33	7:36:11	12:52:51	18:08:52	19:38:58	20:09:16	20:46:00	21:05:15	21:25:20	13:31:25	0.334	10.389	71
04/17/17	M*	4:19:36	4:39:40	4:58:54	5:35:36	6:05:53	7:37:29	12:52:38	18:07:07	19:40:11	20:10:35	20:47:28	21:06:50	21:27:03	13:34:18	0.563	10.740	63
04/18/17	Tu*	4:17:26	4:37:39	4:57:00	5:33:51	6:04:13	7:38:47	12:52:24	18:05:22	19:41:24	20:11:53	20:48:56	21:08:24	21:28:47	13:37:11	0.786	11.088	53
04/19/17	W*	4:15:16	4:35:38	4:55:05	5:32:07	6:02:35	7:40:05	12:52:11	18:03:39	19:42:37	20:13:12	20:50:25	21:10:00	21:30:31	13:40:03	1.001	11.433	43
04/20/17	Th*	4:13:07	4:33:37	4:53:12	5:30:23	6:00:57	7:41:23	12:51:59	18:01:57	19:43:50	20:14:31	20:51:54	21:11:36	21:32:16	13:42:53	1.209	11.775	33
04/21/17	F*	4:10:57	4:31:37	4:51:19	5:28:40	5:59:20	7:42:40	12:51:47	18:00:15	19:45:03	20:15:49	20:53:23	21:13:12	21:34:02	13:45:43	1.409	12.114	24
04/22/17	Sat*	4:08:48	4:29:37	4:49:26	5:26:58	5:57:43	7:43:58	12:51:35	17:58:35	19:46:16	20:17:08	20:54:52	21:14:49	21:35:49	13:48:32	1.602	12.449	15
04/23/17	Sun*	4:06:39	4:27:38	4:47:34	5:25:17	5:56:08	7:45:16	12:51:24	17:56:55	19:47:29	20:18:27	20:56:22	21:16:27	21:37:36	13:51:20	1.786	12.781	8
04/24/17	M*	4:04:30	4:25:39	4:45:43	5:23:37	5:54:34	7:46:34	12:51:14	17:55:17	19:48:41	20:19:46	20:57:52	21:18:05	21:39:25	13:54:07	1.963	13.109	3
04/25/17	Tu*	4:02:21	4:23:41	4:43:53	5:21:57	5:53:01	7:47:51	12:51:04	17:53:39	19:49:54	20:21:06	20:59:22	21:19:43	21:41:13	13:56:53	2.132	13.434	0
04/26/17	W*	4:00:13	4:21:43	4:42:03	5:20:19	5:51:29	7:49:09	12:50:54	17:52:03	19:51:07	20:22:25	21:00:53	21:21:22	21:43:03	13:59:38	2.292	13.756	1
04/27/17	Th*	3:58:05	4:19:46	4:40:14	5:18:41	5:49:58	7:50:26	12:50:45	17:50:28	19:52:19	20:23:44	21:02:24	21:23:01	21:44:53	14:02:21	2.444	14.073	4
04/28/17	F*	3:55:57	4:17:49	4:38:26	5:17:05	5:48:28	7:51:43	12:50:36	17:48:54	19:53:32	20:25:03	21:03:55	21:24:40	21:46:44	14:05:03	2.588	14.387	10
04/29/17	Sat*	3:53:50	4:15:53	4:36:38	5:15:29	5:47:00	7:53:00	12:50:28	17:47:21	19:54:44	20:26:22	21:05:26	21:26:20	21:48:35	14:07:44	2.723	14.697	19
04/30/17	Sun*	3:51:43	4:13:58	4:34:52	5:13:55	5:45:32	7:54:17	12:50:21	17:45:50	19:55:56	20:27:41	21:06:57	21:28:00	21:50:27	14:10:24	2.849	15.002	28
05/01/17	M*	3:49:37	4:12:04	4:33:07	5:12:21	5:44:06	7:55:33	12:50:13	17:44:20	19:57:08	20:29:00	21:08:28	21:29:40	21:52:19	14:13:02	2.967	15.304	39
05/02/17	Tu*	3:47:32	4:10:11	4:31:22	5:10:49	5:42:41	7:56:49	12:50:07	17:42:51	19:58:19	20:30:19	21:09:59	21:31:20	21:54:12	14:15:39	3.077	15.601	50
05/03/17	W*	3:45:27	4:08:18	4:29:39	5:09:18	5:41:17	7:58:05	12:50:01	17:41:24	19:59:31	20:31:37	21:11:31	21:33:01	21:56:05	14:18:14	3.177	15.894	61
05/04/17	Th*	3:43:22	4:06:26	4:27:56	5:07:49	5:39:55	7:59:21	12:49:55	17:39:57	20:00:42	20:32:56	21:13:02	21:34:41	21:57:59	14:20:47	3.269	16.182	71
05/05/17	F*	3:41:19	4:04:36	4:26:15	5:06:20	5:38:34	8:00:36	12:49:50	17:38:33	20:01:52	20:34:14	21:14:33	21:36:22	21:59:52	14:23:19	3.352	16.466	80
05/06/17	Sat*	3:39:16	4:02:46	4:24:35	5:04:53	5:37:14	8:01:51	12:49:46	17:37:10	20:03:03	20:35:32	21:16:04	21:38:02	22:01:46	14:25:49	3.425	16.746	87
05/07/17	Sun*	3:37:14	4:00:58	4:22:56	5:03:28	5:35:56	8:03:06	12:49:42	17:35:48	20:04:13	20:36:49	21:17:34	21:39:43	22:03:41	14:28:17	3.490	17.020	93
05/08/17	M*	3:35:13	3:59:11	4:21:19	5:02:04	5:34:39	8:04:20	12:49:39	17:34:28	20:05:23	20:38:06	21:19:05	21:41:23	22:05:35	14:30:44	3.545	17.290	97
05/09/17	Tu*	3:33:13	3:57:25	4:19:43	5:00:41	5:33:24	8:05:33	12:49:36	17:33:09	20:06:32	20:39:23	21:20:35	21:43:04	22:07:30	14:33:08	3.590	17.556	99
05/10/17	W*	3:31:14	3:55:40	4:18:08	4:59:20	5:32:10	8:06:46	12:49:34	17:31:52	20:07:41	20:40:39	21:22:05	21:44:44	22:09:24	14:35:31	3.627	17.816	100
05/11/17	Th*	3:29:16	3:53:56	4:16:35	4:58:00	5:30:58	8:07:59	12:49:32	17:30:37	20:08:49	20:41:55	21:23:34	21:46:24	22:11:19	14:37:51	3.653	18.071	98
05/12/17	F*	3:27:19	3:52:14	4:15:03	4:56:42	5:29:47	8:09:11	12:49:31	17:29:23	20:09:57	20:43:11	21:25:03	21:48:03	22:13:14	14:40:10	3.670	18.321	95
05/13/17	Sat*	3:25:24	3:50:34	4:13:33	4:55:25	5:28:39	8:10:23	12:49:31	17:28:11	20:11:04	20:44:26	21:26:32	21:49:42	22:15:08	14:42:26	3.678	18.566	91
05/14/17	Sun*	3:23:29	3:48:55	4:12:05	4:54:11	5:27:31	8:11:34	12:49:31	17:27:01	20:12:11	20:45:40	21:28:00	21:51:21	22:17:02	14:44:40	3.675	18.806	85
05/15/17	M*	3:21:37	3:47:18	4:10:38	4:52:58	5:26:26	8:12:44	12:49:32	17:25:53	20:13:17	20:46:54	21:29:28	21:52:59	22:18:56	14:46:51	3.664	19.041	77
05/16/17	Tu*	3:19:45	3:45:42	4:09:13	4:51:46	5:25:22	8:13:54	12:49:33	17:24:47	20:14:23	20:48:07	21:30:55	21:54:37	22:20:50	14:49:01	3.642	19.270	69
05/17/17	W*	3:17:55	3:44:08	4:07:50	4:50:37	5:24:21	8:15:03	12:49:35	17:23:42	20:15:28	20:49:19	21:32:21	21:56:13	22:22:43	14:51:07	3.611	19.494	59
05/18/17	Th*	3:16:07	3:42:36	4:06:29	4:49:29	5:23:21	8:16:11	12:49:37	17:22:39	20:16:32	20:50:31	21:33:46	21:57:49	22:24:35	14:53:12	3.570	19.712	49
05/19/17	F*	3:14:21	3:41:06	4:05:09	4:48:24	5:22:22	8:17:18	12:49:40	17:21:39	20:17:36	20:51:42	21:35:10	21:59:25	22:26:27	14:55:13	3.520	19.925	39
05/20/17	Sat*	3:12:36	3:39:38	4:03:52	4:47:20	5:21:26	8:18:24	12:49:44	17:20:40	20:18:38	20:52:52	21:36:34	22:00:59	22:28:18	14:57:12	3.461	20.132	28
05/21/17	Sun*	3:10:53	3:38:12	4:02:37	4:46:18	5:20:32	8:19:30	12:49:48	17:19:43	20:19:40	20:54:01	21:37:56	22:02:32	22:30:08	14:59:08	3.392	20.333	19
05/22/17	M*	3:09:13	3:36:48	4:01:24	4:45:19	5:19:39	8:20:35	12:49:53	17:18:49	20:20:41	20:55:09	21:39:18	22:04:05	22:31:57	15:01:01	3.314	20.529	11
05/23/17	Tu*	3:07:34	3:35:26	4:00:13	4:44:21	5:18:49	8:21:38	12:49:58	17:17:56	20:21:41	20:56:16	21:40:38	22:05:					

Date	DoW	Begin	Begin	Begin	Begin	Sunrise	Sun East	Local Noon	Sun West	Sunset	End Civil	End Nautical	End 15-deg.	End	Length of Day	Noon Eqn Time	Noon sun declination	9 PM Lunar Illum.
		Astro-nomical Twilight	15-deg. Twilight	Nautical Twilight	Civil Twilight									Astro-nomical Twilight				
06/16/17	F*	2:43:46	3:17:04	3:45:02	4:32:55	5:09:19	8:39:48	12:53:59	17:08:07	20:38:45	21:15:11	22:03:06	22:31:07	23:04:31	15:29:26	-0.790	23.368	54
06/17/17	Sat*	2:43:38	3:17:01	3:45:02	4:32:57	5:09:23	8:40:10	12:54:12	17:08:11	20:39:06	21:15:32	22:03:31	22:31:33	23:05:00	15:29:43	-1.006	23.395	43
06/18/17	Sun*	2:43:34	3:17:02	3:45:04	4:33:02	5:09:29	8:40:30	12:54:25	17:08:18	20:39:24	21:15:52	22:03:52	22:31:56	23:05:26	15:29:55	-1.224	23.415	32
06/19/17	M*	2:43:36	3:17:06	3:45:10	4:33:10	5:09:38	8:40:48	12:54:38	17:08:27	20:39:41	21:16:09	22:04:09	22:32:14	23:05:46	15:30:03	-1.443	23.428	22
06/20/17	Tu*	2:43:43	3:17:14	3:45:19	4:33:20	5:09:48	8:41:03	12:54:51	17:08:39	20:39:55	21:16:23	22:04:24	22:32:29	23:06:01	15:30:07	-1.662	23.434	13
06/21/17	W*	2:43:54	3:17:26	3:45:32	4:33:33	5:10:01	8:41:17	12:55:04	17:08:53	20:40:07	21:16:35	22:04:36	22:32:41	23:06:12	15:30:06	-1.881	23.433	6
06/22/17	Th*	2:44:11	3:17:42	3:45:47	4:33:48	5:10:16	8:41:28	12:55:18	17:09:09	20:40:17	21:16:45	22:04:44	22:32:48	23:06:18	15:30:02	-2.099	23.426	2
06/23/17	F*	2:44:32	3:18:02	3:46:06	4:34:05	5:10:33	8:41:36	12:55:31	17:09:27	20:40:25	21:16:52	22:04:49	22:32:52	23:06:18	15:29:53	-2.317	23.411	0
06/24/17	Sat*	2:44:58	3:18:25	3:46:27	4:34:25	5:10:51	8:41:43	12:55:44	17:09:47	20:40:31	21:16:56	22:04:51	22:32:52	23:06:14	15:29:39	-2.533	23.390	2
06/25/17	Sun*	2:45:29	3:18:51	3:46:52	4:34:47	5:11:12	8:41:47	12:55:56	17:10:10	20:40:34	21:16:58	22:04:50	22:32:48	23:06:05	15:29:22	-2.746	23.361	6
06/26/17	M*	2:46:04	3:19:22	3:47:19	4:35:11	5:11:35	8:41:48	12:56:09	17:10:34	20:40:35	21:16:57	22:04:46	22:32:40	23:05:51	15:29:00	-2.958	23.326	13
06/27/17	Tu*	2:46:44	3:19:55	3:47:50	4:35:38	5:12:00	8:41:48	12:56:22	17:11:01	20:40:34	21:16:54	22:04:38	22:32:28	23:05:32	15:28:34	-3.166	23.285	21
06/28/17	W*	2:47:29	3:20:33	3:48:23	4:36:07	5:12:27	8:41:44	12:56:34	17:11:29	20:40:30	21:16:48	22:04:27	22:32:13	23:05:08	15:28:03	-3.371	23.236	31
06/29/17	Th*	2:48:17	3:21:13	3:48:59	4:36:38	5:12:56	8:41:39	12:56:46	17:12:00	20:40:25	21:16:39	22:04:13	22:31:54	23:04:40	15:27:29	-3.572	23.180	41
06/30/17	F*	2:49:10	3:21:57	3:49:38	4:37:11	5:13:26	8:41:31	12:56:58	17:12:32	20:40:16	21:16:28	22:03:55	22:31:31	23:04:07	15:26:50	-3.769	23.118	51
07/01/17	Sat*	2:50:07	3:22:44	3:50:19	4:37:47	5:13:58	8:41:20	12:57:09	17:13:07	20:40:06	21:16:14	22:03:35	22:31:04	23:03:30	15:26:08	-3.962	23.049	61
07/02/17	Sun*	2:51:08	3:23:34	3:51:03	4:38:24	5:14:32	8:41:07	12:57:21	17:13:43	20:39:53	21:15:58	22:03:11	22:30:34	23:02:48	15:25:21	-4.149	22.973	70
07/03/17	M*	2:52:13	3:24:27	3:51:50	4:39:03	5:15:08	8:40:52	12:57:31	17:14:21	20:39:38	21:15:39	22:02:44	22:30:00	23:02:02	15:24:30	-4.331	22.891	78
07/04/17	Tu*	2:53:21	3:25:23	3:52:39	4:39:45	5:15:45	8:40:34	12:57:42	17:15:01	20:39:21	21:15:17	22:02:14	22:29:23	23:01:12	15:23:35	-4.508	22.802	86
07/05/17	W*	2:54:33	3:26:22	3:53:30	4:40:28	5:16:24	8:40:14	12:57:52	17:15:42	20:39:01	21:14:53	22:01:41	22:28:42	23:00:17	15:22:37	-4.679	22.706	92
07/06/17	Th*	2:55:48	3:27:23	3:54:24	4:41:13	5:17:05	8:39:51	12:58:02	17:16:25	20:38:39	21:14:26	22:01:05	22:27:58	23:00:19	15:21:34	-4.844	22.604	96
07/07/17	F*	2:57:07	3:28:27	3:55:20	4:42:00	5:17:47	8:39:26	12:58:12	17:17:10	20:38:15	21:13:57	22:00:26	22:27:11	22:58:17	15:20:28	-5.002	22.495	99
07/08/17	Sat*	2:58:28	3:29:34	3:56:19	4:42:48	5:18:30	8:38:59	12:58:21	17:17:56	20:37:48	21:13:25	21:59:45	22:26:20	22:57:11	15:19:18	-5.154	22.380	100
07/09/17	Sun*	2:59:52	3:30:43	3:57:19	4:43:38	5:19:15	8:38:29	12:58:30	17:18:44	20:37:20	21:12:51	21:59:00	22:25:27	22:56:02	15:18:04	-5.299	22.258	99
07/10/17	M*	3:01:19	3:31:55	3:58:21	4:44:30	5:20:02	8:37:57	12:58:38	17:19:34	20:36:49	21:12:14	21:58:12	22:24:30	22:54:50	15:16:47	-5.437	22.130	96
07/11/17	Tu*	3:02:48	3:33:08	3:59:26	4:45:24	5:20:50	8:37:23	12:58:46	17:20:24	20:36:16	21:11:35	21:57:22	22:23:30	22:53:34	15:15:26	-5.568	21.996	92
07/12/17	W*	3:04:20	3:34:24	4:00:32	4:46:19	5:21:39	8:36:46	12:58:53	17:21:17	20:35:40	21:10:54	21:56:29	22:22:27	22:52:15	15:14:02	-5.691	21.855	85
07/13/17	Th*	3:05:54	3:35:42	4:01:40	4:47:15	5:22:29	8:36:07	12:59:00	17:22:10	20:35:03	21:10:10	21:55:34	22:21:22	22:50:53	15:12:34	-5.807	21.708	77
07/14/17	F*	3:07:30	3:37:01	4:02:49	4:48:13	5:23:21	8:35:26	12:59:06	17:23:05	20:34:23	21:09:24	21:54:35	22:20:13	22:49:28	15:11:03	-5.914	21.555	68
07/15/17	Sat*	3:09:08	3:38:22	4:04:00	4:49:12	5:24:13	8:34:43	12:59:12	17:24:01	20:33:41	21:08:36	21:53:35	22:19:02	22:48:00	15:09:28	-6.014	21.396	58
07/16/17	Sun*	3:10:48	3:39:45	4:05:13	4:50:12	5:25:07	8:33:57	12:59:18	17:24:58	20:32:57	21:07:46	21:52:32	22:17:49	22:46:30	15:07:50	-6.105	21.231	47
07/17/17	M*	3:12:29	3:41:10	4:06:27	4:51:14	5:26:02	8:33:09	12:59:23	17:25:57	20:32:12	21:06:53	21:51:26	22:16:33	22:44:57	15:06:09	-6.188	21.059	35
07/18/17	Tu*	3:14:12	3:42:36	4:07:43	4:52:17	5:26:58	8:32:19	12:59:27	17:26:56	20:31:24	21:05:58	21:50:18	22:15:14	22:43:21	15:04:25	-6.263	20.882	25
07/19/17	W*	3:15:57	3:44:04	4:09:00	4:53:20	5:27:55	8:31:27	12:59:31	17:27:57	20:30:34	21:05:01	21:49:08	22:13:54	22:41:44	15:02:38	-6.329	20.699	15
07/20/17	Th*	3:17:42	3:45:32	4:10:18	4:54:25	5:28:53	8:30:33	12:59:35	17:28:58	20:29:42	21:04:02	21:47:56	22:12:31	22:40:04	15:00:49	-6.385	20.510	8
07/21/17	F*	3:19:29	3:47:02	4:11:37	4:55:31	5:29:52	8:29:37	12:59:38	17:30:01	20:28:48	21:03:01	21:46:41	22:11:05	22:38:22	14:58:56	-6.433	20.315	2
07/22/17	Sat*	3:21:16	3:48:33	4:12:57	4:56:38	5:30:52	8:28:39	12:59:40	17:31:04	20:27:52	21:01:58	21:45:25	22:09:38	22:36:38	14:57:00	-6.471	20.115	0
07/23/17	Sun*	3:23:05	3:50:05	4:14:19	4:57:46	5:31:52	8:27:39	12:59:42	17:32:08	20:26:54	21:00:52	21:44:06	22:08:08	22:34:53	14:55:02	-6.500	19.909	1
07/24/17	M*	3:24:54	3:51:38	4:15:41	4:58:54	5:32:53	8:26:36	12:59:43	17:33:13	20:25:54	20:59:45	21:42:45	22:06:37	22:33:05	14:53:01	-6.518	19.697	4
07/25/17	Tu*	3:26:43	3:53:12	4:17:04	5:00:04	5:33:55	8:25:32	12:59:43	17:34:19	20:24:53	20:58:36	21:41:23	22:05:04	22:31:16	14:50:58	-6.527	19.481	10
07/26/17	W*	3:28:34	3:54:46	4:18:27	5:01:14	5:34:58	8:24:26	12:59:43	17:35:26	20:23:50	20:57:26	21:39:58	22:03:29	22:29:25	14:48:52	-6.526	19.258	17
07/27/17	Th*	3:30:24	3:56:21	4:19:51	5:02:24	5:36:01	8:23:18	12:59:42	17:36:33	20:22:44	20:56:13	21:38:32	22:01:52	22:27:32	14:46:44	-6.514	19.031	26
07/28/17	F*	3:32:15	3:57:56	4:21:16	5:03:35	5:37:05	8:22:09	12:59:41	17:37:40	20:21:37	20:54:58	21:37:04	22:00:13	22:25:38	14:44:33	-6.492	18.798	35
07/29/17	Sat*	3:34:06	3:59:32	4:22:41	5:04:47	5:38:09	8:20:57	12:59:39	17:38:49	20:20:29	20:53:42	21:35:34	21:58:33	22:23:43	14:42:20	-6.460	18.560	45
07/30/17	Sun*	3:35:58	4:01:08	4:24:07	5:05:59	5:39:13	8:19:44	12:59:37	17:39:57	20:19:18	20:52:24	21:34:03	21:56:51	22:21:46	14:40:05	-6.417	18.317	55
07/31/17	M*	3:37:49	4:02:44	4:25:33	5:07:12	5:40:19	8:18:29	12:59:33	17:41:07	20:18:06	20:51:05	21:32:29	21:55:08	22:19:48	14:37:48	-6.364	18.069	64
08/01/17	Tu*	3:39:40	4:04:21	4:27:00	5:08:25	5:41:24	8:17:12	12:59:30	17:42:16	20:16:53	20:49:44	21:30:55	21:53:23	22:17:49	14:35:29	-6.300	17.816	73
08/02/17	W*	3:41:32	4:05:58	4:28:27	5:09:38	5:42:30	8:15:53	12:59:25	17:43:27	20:15:37	20:48:21	21:29:19	21:51:37	22:15:49	14:33:07	-6.226	17.558	81
08/03/17	Th*	3:43:23	4:07:35	4:29:54	5:10:52	5:43:36	8:14:33	12:59:20	17:44:37	20:14:21	20:46:57	21:27:41	21:49:50	22:13:48	14:30:44	-6.142	17.296	88
08/04/17	F*	3:45:14	4:09:12	4:31:21	5:12:06	5:44:43	8:13:11	12:59:14	17:45:48	20:13:02	20:45:31	21:26:03	21:48:01	22:11:46	14:28:19	-6.047	17.029	93
08/05/17	Sat*	3:47:04	4:10:49	4:32:48	5:13:20	5:45:50	8:11:48	12:59:08	17:46:59	20:11:42	20:44:04	21:24:22	21:46:12	22:09:42	14:25:53	-5.942	16.757	97
08/06/17	Sun*	3:48:55	4:12:26	4:34:15	5:14:35	5:46:57	8:10:23	12:59:01	17:48:11	20:10:21	20:42:35	21:22:41	21:44:21	22:07:38	14:23:24	-5.827	16.481	100
08/07/17	M*	3:50:45	4:14:03	4:35:43	5:15:49	5:48:04	8:08:57	12:58:54	17:49:23	20:08:58	20:41:05	21:20:58	21:42:29	2				

Date	DoW	Begin	Begin	Begin	Begin	Sunrise	Sun	Local	Sun	Sunset	End	End 15-	End	Length	Noon	Noon	9 PM	
		Astro-nomical	15-deg.	Nautical	Civil		East	Noon	West		End Civil	Nautical	deg.		Astro-nomical	Eqn		sun decli-nation
08/31/17	Th*	4:31:44	4:51:05	5:09:45	5:45:40	6:15:31	7:28:40	12:53:21	18:18:45	19:30:23	20:00:08	20:35:53	20:54:27	21:13:40	13:14:53	-0.157	8.362	75
09/01/17	F*	4:33:17	4:52:31	5:11:06	5:46:53	6:16:39	7:26:48	12:53:02	18:19:58	19:28:37	19:58:17	20:33:54	20:52:23	21:11:30	13:11:58	0.161	7.999	83
09/02/17	Sat*	4:34:50	4:53:57	5:12:26	5:48:05	6:17:48	7:24:56	12:52:43	18:21:12	19:26:49	19:56:26	20:31:56	20:50:19	21:09:19	13:09:02	0.484	7.634	90
09/03/17	Sun*	4:36:21	4:55:22	5:13:46	5:49:18	6:18:56	7:23:03	12:52:23	18:22:26	19:25:02	19:54:34	20:29:57	20:48:15	21:07:09	13:06:06	0.812	7.267	95
09/04/17	M*	4:37:52	4:56:46	5:15:06	5:50:30	6:20:04	7:21:10	12:52:03	18:23:39	19:23:14	19:52:42	20:27:58	20:46:11	21:04:58	13:03:09	1.145	6.898	99
09/05/17	Tu*	4:39:22	4:58:10	5:16:25	5:51:42	6:21:13	7:19:16	12:51:43	18:24:53	19:21:25	19:50:49	20:25:58	20:44:07	21:02:49	13:00:12	1.481	6.527	100
09/06/17	W*	4:40:52	4:59:33	5:17:43	5:52:54	6:22:21	7:17:22	12:51:22	18:26:07	19:19:36	19:48:57	20:23:59	20:42:04	21:00:39	12:57:15	1.821	6.154	99
09/07/17	Th*	4:42:20	5:00:56	5:19:02	5:54:06	6:23:30	7:15:27	12:51:02	18:27:21	19:17:46	19:47:04	20:22:00	20:40:00	20:58:30	12:54:17	2.164	5.780	96
09/08/17	F*	4:43:48	5:02:19	5:20:20	5:55:18	6:24:38	7:13:32	12:50:41	18:28:34	19:15:57	19:45:11	20:20:01	20:37:57	20:56:21	12:51:19	2.510	5.404	91
09/09/17	Sat*	4:45:16	5:03:41	5:21:37	5:56:29	6:25:46	7:11:37	12:50:20	18:29:48	19:14:06	19:43:18	20:18:02	20:35:53	20:54:12	12:48:20	2.859	5.026	83
09/10/17	Sun*	4:46:42	5:05:02	5:22:54	5:57:41	6:26:55	7:09:41	12:49:59	18:31:02	19:12:16	19:41:25	20:16:03	20:33:50	20:52:04	12:45:21	3.209	4.647	74
09/11/17	M*	4:48:08	5:06:23	5:24:11	5:58:52	6:28:03	7:07:45	12:49:38	18:32:16	19:10:25	19:39:31	20:14:04	20:31:48	20:49:56	12:42:22	3.562	4.267	63
09/12/17	Tu*	4:49:34	5:07:43	5:25:28	6:00:03	6:29:12	7:05:49	12:49:17	18:33:30	19:08:35	19:37:38	20:12:06	20:29:45	20:47:49	12:39:23	3.915	3.886	52
09/13/17	W*	4:50:59	5:09:04	5:26:44	6:01:15	6:30:20	7:03:52	12:48:56	18:34:44	19:06:44	19:35:44	20:10:07	20:27:43	20:45:43	12:36:23	4.270	3.503	40
09/14/17	Th*	4:52:23	5:10:23	5:28:00	6:02:26	6:31:29	7:01:56	12:48:34	18:35:59	19:04:52	19:33:51	20:08:09	20:25:41	20:43:36	12:33:23	4.625	3.119	29
09/15/17	F*	4:53:46	5:11:42	5:29:16	6:03:37	6:32:38	6:59:59	12:48:13	18:37:13	19:03:01	19:31:57	20:06:11	20:23:40	20:41:31	12:30:23	4.981	2.734	20
09/16/17	Sat*	4:55:09	5:13:01	5:30:31	6:04:47	6:33:47	6:58:02	12:47:52	18:38:28	19:01:10	19:30:04	20:04:13	20:21:39	20:39:26	12:27:23	5.337	2.348	11
09/17/17	Sun*	4:56:32	5:14:19	5:31:47	6:05:58	6:34:56	6:56:05	12:47:30	18:39:42	18:59:18	19:28:11	20:02:16	20:19:38	20:37:21	12:24:23	5.693	1.962	5
09/18/17	M*	4:57:54	5:15:37	5:33:01	6:07:09	6:36:05	6:54:08	12:47:09	18:40:57	18:57:27	19:26:18	20:00:18	20:17:38	20:35:17	12:21:22	6.048	1.575	1
09/19/17	Tu*	4:59:15	5:16:55	5:34:16	6:08:20	6:37:14	6:52:10	12:46:48	18:42:12	18:55:35	19:24:25	19:58:22	20:15:39	20:33:14	12:18:21	6.403	1.187	0
09/20/17	W*	5:00:36	5:18:12	5:35:30	6:09:31	6:38:23	6:50:13	12:46:26	18:43:27	18:53:44	19:22:32	19:56:25	20:13:40	20:31:11	12:15:21	6.756	0.799	1
09/21/17	Th*	5:01:56	5:19:29	5:36:45	6:10:41	6:39:32	6:48:16	12:46:05	18:44:42	18:51:52	19:20:39	19:54:29	20:11:41	20:29:09	12:12:20	7.108	0.410	4
09/22/17	F*	5:03:16	5:20:45	5:37:58	6:11:52	6:40:42	6:46:19	12:45:44	18:45:58	18:50:01	19:18:47	19:52:34	20:09:43	20:27:08	12:09:19	7.459	0.021	9
09/23/17	Sat*	5:04:36	5:22:02	5:39:12	6:13:02	6:41:52	6:44:21	12:45:23	18:47:13	18:48:09	19:16:54	19:50:39	20:07:45	20:25:07	12:06:18	7.808	-0.369	16
09/24/17	Sun*	5:05:55	5:23:17	5:40:26	6:14:13	6:43:01		12:45:02		18:46:18	19:15:02	19:48:44	20:05:49	20:23:07	12:03:17	8.155	-0.758	23
09/25/17	M*	5:07:13	5:24:33	5:41:39	6:15:24	6:44:11		12:44:42		18:44:27	19:13:11	19:46:50	20:03:52	20:21:08	12:00:16	8.499	-1.147	32
09/26/17	Tu*	5:08:31	5:25:48	5:42:52	6:16:34	6:45:21		12:44:21		18:42:36	19:11:19	19:44:56	20:01:57	20:19:10	11:57:15	8.841	-1.537	41
09/27/17	W*	5:09:48	5:27:03	5:44:05	6:17:45	6:46:32		12:44:01		18:40:45	19:09:29	19:43:03	20:00:02	20:17:12	11:54:14	9.180	-1.926	50
09/28/17	Th*	5:11:05	5:28:17	5:45:17	6:18:55	6:47:42		12:43:41		18:38:55	19:07:38	19:41:11	19:58:08	20:15:16	11:51:13	9.515	-2.315	60
09/29/17	F*	5:12:22	5:29:32	5:46:30	6:20:06	6:48:53		12:43:21		18:37:05	19:05:48	19:39:19	19:56:14	20:13:20	11:48:12	9.846	-2.703	69
09/30/17	Sat*	5:13:38	5:30:46	5:47:42	6:21:17	6:50:04		12:43:01		18:35:15	19:03:58	19:37:28	19:54:21	20:11:25	11:45:11	10.173	-3.091	78
10/01/17	Sun*	5:14:54	5:31:59	5:48:54	6:22:27	6:51:15		12:42:42		18:33:25	19:02:09	19:35:37	19:52:29	20:09:31	11:42:11	10.496	-3.479	85
10/02/17	M*	5:16:10	5:33:13	5:50:06	6:23:38	6:52:26		12:42:23		18:31:36	19:00:21	19:33:48	19:50:38	20:07:38	11:39:10	10.814	-3.866	92
10/03/17	Tu*	5:17:25	5:34:26	5:51:18	6:24:49	6:53:37		12:42:04		18:29:47	18:58:32	19:31:58	19:48:48	20:05:45	11:36:10	11.127	-4.252	97
10/04/17	W*	5:18:40	5:35:39	5:52:30	6:26:00	6:54:49		12:41:46		18:27:59	18:56:45	19:30:10	19:46:58	20:03:54	11:33:10	11.434	-4.637	99
10/05/17	Th*	5:19:55	5:36:52	5:53:42	6:27:11	6:56:01		12:41:28		18:26:11	18:54:58	19:28:23	19:45:10	20:02:04	11:30:10	11.736	-5.021	100
10/06/17	F*	5:21:09	5:38:05	5:54:54	6:28:22	6:57:13		12:41:10		18:24:24	18:53:12	19:26:36	19:43:22	20:00:15	11:27:11	12.030	-5.404	97
10/07/17	Sat*	5:22:23	5:39:17	5:56:05	6:29:33	6:58:26		12:40:53		18:22:37	18:51:26	19:24:50	19:41:36	19:58:27	11:24:12	12.318	-5.786	93
10/08/17	Sun*	5:23:37	5:40:30	5:57:17	6:30:45	6:59:38		12:40:36		18:20:51	18:49:42	19:23:06	19:39:50	19:56:40	11:21:13	12.599	-6.167	85
10/09/17	M*	5:24:50	5:41:42	5:58:28	6:31:56	7:00:51		12:40:19		18:19:05	18:47:58	19:21:22	19:38:05	19:54:54	11:18:14	12.873	-6.546	76
10/10/17	Tu*	5:26:04	5:42:54	5:59:40	6:33:08	7:02:05		12:40:03		18:17:20	18:46:14	19:19:39	19:36:22	19:53:10	11:15:15	13.138	-6.924	66
10/11/17	W*	5:27:17	5:44:06	6:00:52	6:34:20	7:03:19		12:39:48		18:15:36	18:44:32	19:17:57	19:34:39	19:51:26	11:12:17	13.395	-7.301	55
10/12/17	Th*	5:28:30	5:45:19	6:02:03	6:35:32	7:04:33		12:39:33		18:13:52	18:42:50	19:16:16	19:32:58	19:49:44	11:09:20	13.643	-7.676	43
10/13/17	F*	5:29:43	5:46:31	6:03:15	6:36:45	7:05:47		12:39:19		18:12:10	18:41:10	19:14:36	19:31:18	19:48:03	11:06:23	13.883	-8.049	32
10/14/17	Sat*	5:30:56	5:47:42	6:04:27	6:37:57	7:07:02		12:39:05		18:10:28	18:39:30	19:12:57	19:29:39	19:46:23	11:03:26	14.113	-8.420	23
10/15/17	Sun*	5:32:08	5:48:54	6:05:38	6:39:10	7:08:17		12:38:52		18:08:46	18:37:51	19:11:19	19:28:01	19:44:45	11:00:29	14.333	-8.790	14
10/16/17	M*	5:33:21	5:50:06	6:06:50	6:40:23	7:09:32		12:38:39		18:07:06	18:36:13	19:09:43	19:26:24	19:43:08	10:57:34	14.544	-9.157	8
10/17/17	Tu*	5:34:33	5:51:18	6:08:02	6:41:36	7:10:48		12:38:27		18:05:26	18:34:36	19:08:07	19:24:49	19:41:32	10:54:38	14.745	-9.522	3
10/18/17	W*	5:35:45	5:52:30	6:09:14	6:42:49	7:12:04		12:38:16		18:03:48	18:33:00	19:06:33	19:23:15	19:39:57	10:51:44	14.936	-9.885	1
10/19/17	Th*	5:36:57	5:53:42	6:10:25	6:44:03	7:13:20		12:38:05		18:02:10	18:31:26	19:05:00	19:21:42	19:38:24	10:48:50	15.116	-10.246	0
10/20/17	F*	5:38:09	5:54:53	6:11:37	6:45:16	7:14:37		12:37:55		18:00:33	18:29:52	19:03:28	19:20:11	19:36:53	10:45:56	15.286	-10.604	2
10/21/17	Sat*	5:39:21	5:56:05	6:12:49	6:46:30	7:15:54		12:37:45		17:58:58	18:28:20	19:01:58	19:18:40	19:35:22	10:43:04	15.445	-10.959	5
10/22/17	Sun*	5:40:33	5:57:16	6:14:01	6:47:44	7:17:11		12:37:36		17:57:23	18:26:48	19:00:29	19:17:12	19:33:53	10:40:12	15.592	-11.312	11
10/23/17	M*	5:41:44	5:58:28	6:15:13	6:48:58	7:18:29		12:37:28		17:55:49	18:25:18	18:59:01	19:15:44	19:32:26	10:37:21	15.729	-11.662	17
10/24/17	Tu*	5:42:56	5:59:39	6:16:25	6:50:13	7:19:47		12:37:21		17:54:17	18:23:49	18:57:34	19:14:18	19:31:00	10:34:30	15.854	-12.008	25
10/25/17	W*	5:44:07																

HVO -103.297529, 44.108178, Time Zone = MST/MDT

Date	DoW	Begin	Begin	Begin	Begin	Sunrise	Sun East	Local Noon	Sun West	Sunset	End			End	Length of Day	Noon	sun	Lunar Illum.
		Astro-nomical Twilight	15-deg. Twilight	Nautical Twilight	Civil Twilight						Astro-nomical Twilight	15-deg. Twilight	Astro-nomical Twilight	Eqn Time (min.)		declination (deg.)		
11/15/17	W	5:08:27	5:25:27	5:42:36	6:17:39	6:48:52	11:37:52			16:26:26	16:57:38	17:32:39	17:49:49	18:06:48	9:37:34	15.324	-18.667	5
11/16/17	Th	5:09:34	5:26:35	5:43:46	6:18:53	6:50:10	11:38:04			16:25:30	16:56:47	17:31:53	17:49:04	18:06:04	9:35:20	15.138	-18.915	2
11/17/17	F	5:10:40	5:27:42	5:44:55	6:20:06	6:51:28	11:38:16			16:24:37	16:55:58	17:31:08	17:48:20	18:05:22	9:33:08	14.938	-19.158	0
11/18/17	Sat	5:11:47	5:28:50	5:46:04	6:21:19	6:52:46	11:38:28			16:23:45	16:55:12	17:30:26	17:47:39	18:04:42	9:30:59	14.725	-19.395	1
11/19/17	Sun	5:12:52	5:29:57	5:47:12	6:22:31	6:54:03	11:38:42			16:22:56	16:54:27	17:29:45	17:47:01	18:04:04	9:28:52	14.498	-19.626	3
11/20/17	M	5:13:58	5:31:03	5:48:20	6:23:43	6:55:20	11:38:56			16:22:09	16:53:45	17:29:07	17:46:24	18:03:29	9:26:48	14.257	-19.852	7
11/21/17	Tu	5:15:02	5:32:09	5:49:27	6:24:54	6:56:36	11:39:12			16:21:23	16:53:05	17:28:31	17:45:49	18:02:55	9:24:47	14.003	-20.071	12
11/22/17	W	5:16:06	5:33:14	5:50:34	6:26:05	6:57:52	11:39:28			16:20:41	16:52:27	17:27:57	17:45:17	18:02:24	9:22:49	13.736	-20.284	19
11/23/17	Th	5:17:10	5:34:19	5:51:40	6:27:15	6:59:07	11:39:44			16:20:00	16:51:51	17:27:25	17:44:46	18:01:55	9:20:54	13.456	-20.491	26
11/24/17	F	5:18:13	5:35:23	5:52:46	6:28:25	7:00:21	11:40:02			16:19:22	16:51:18	17:26:56	17:44:18	18:01:28	9:19:01	13.163	-20.692	35
11/25/17	Sat	5:19:15	5:36:26	5:53:51	6:29:33	7:01:34	11:40:20			16:18:46	16:50:46	17:26:28	17:43:52	18:01:03	9:17:12	12.859	-20.886	45
11/26/17	Sun	5:20:17	5:37:29	5:54:55	6:30:41	7:02:46	11:40:39			16:18:13	16:50:17	17:26:03	17:43:28	18:00:40	9:15:27	12.542	-21.074	55
11/27/17	M	5:21:17	5:38:31	5:55:58	6:31:48	7:03:57	11:40:59			16:17:41	16:49:51	17:25:40	17:43:07	18:00:20	9:13:44	12.213	-21.255	65
11/28/17	Tu	5:22:17	5:39:32	5:57:00	6:32:54	7:05:08	11:41:19			16:17:13	16:49:26	17:25:19	17:42:47	18:00:01	9:12:05	11.872	-21.429	75
11/29/17	W	5:23:17	5:40:32	5:58:02	6:33:59	7:06:17	11:41:41			16:16:46	16:49:04	17:25:00	17:42:30	17:59:45	9:10:29	11.521	-21.597	83
11/30/17	Th	5:24:15	5:41:31	5:59:03	6:35:03	7:07:25	11:42:02			16:16:22	16:48:44	17:24:44	17:42:15	17:59:31	9:08:57	11.159	-21.757	91
12/01/17	F	5:25:12	5:42:30	6:00:02	6:36:06	7:08:32	11:42:25			16:16:01	16:48:27	17:24:30	17:42:02	17:59:19	9:07:29	10.786	-21.911	97
12/02/17	Sat	5:26:09	5:43:27	6:01:01	6:37:08	7:09:38	11:42:48			16:15:42	16:48:12	17:24:18	17:41:51	17:59:10	9:06:05	10.402	-22.058	99
12/03/17	Sun	5:27:04	5:44:24	6:01:59	6:38:08	7:10:42	11:43:11			16:15:26	16:47:59	17:24:09	17:41:43	17:59:02	9:04:44	10.009	-22.197	99
12/04/17	M	5:27:59	5:45:19	6:02:55	6:39:08	7:11:45	11:43:36			16:15:12	16:47:49	17:24:01	17:41:37	17:58:57	9:03:27	9.605	-22.330	96
12/05/17	Tu	5:28:52	5:46:14	6:03:50	6:40:06	7:12:46	11:44:00			16:15:01	16:47:41	17:23:56	17:41:33	17:58:54	9:02:14	9.193	-22.455	91
12/06/17	W	5:29:45	5:47:07	6:04:45	6:41:03	7:13:46	11:44:26			16:14:52	16:47:36	17:23:54	17:41:31	17:58:53	9:01:06	8.771	-22.573	83
12/07/17	Th	5:30:36	5:47:59	6:05:38	6:41:58	7:14:45	11:44:51			16:14:46	16:47:33	17:23:53	17:41:32	17:58:54	9:00:01	8.341	-22.684	73
12/08/17	F	5:31:26	5:48:50	6:06:29	6:42:52	7:15:42	11:45:18			16:14:43	16:47:32	17:23:55	17:41:34	17:58:58	8:59:00	7.902	-22.787	63
12/09/17	Sat	5:32:15	5:49:39	6:07:20	6:43:45	7:16:37	11:45:45			16:14:42	16:47:34	17:23:59	17:41:39	17:59:03	8:58:04	7.455	-22.883	52
12/10/17	Sun	5:33:02	5:50:27	6:08:09	6:44:36	7:17:31	11:46:12			16:14:43	16:47:38	17:24:05	17:41:46	17:59:11	8:57:12	7.001	-22.971	41
12/11/17	M	5:33:49	5:51:14	6:08:57	6:45:26	7:18:23	11:46:39			16:14:48	16:47:45	17:24:14	17:41:56	17:59:21	8:56:25	6.540	-23.052	31
12/12/17	Tu	5:34:34	5:52:00	6:09:43	6:46:14	7:19:13	11:47:07			16:14:54	16:47:54	17:24:24	17:42:07	17:59:33	8:55:42	6.073	-23.125	23
12/13/17	W	5:35:17	5:52:44	6:10:27	6:47:00	7:20:01	11:47:36			16:15:04	16:48:05	17:24:37	17:42:21	17:59:47	8:55:03	5.599	-23.190	15
12/14/17	Th	5:36:00	5:53:27	6:11:11	6:47:45	7:20:47	11:48:05			16:15:16	16:48:19	17:24:52	17:42:36	18:00:03	8:54:29	5.121	-23.248	9
12/15/17	F	5:36:40	5:54:08	6:11:52	6:48:27	7:21:32	11:48:34			16:15:31	16:48:35	17:25:10	17:42:54	18:00:21	8:53:59	4.638	-23.298	4
12/16/17	Sat	5:37:20	5:54:48	6:12:32	6:49:08	7:22:14	11:49:03			16:15:48	16:48:53	17:25:29	17:43:14	18:00:41	8:53:34	4.151	-23.340	1
12/17/17	Sun	5:37:57	5:55:25	6:13:11	6:49:47	7:22:54	11:49:32			16:16:07	16:49:14	17:25:51	17:43:36	18:01:04	8:53:13	3.660	-23.375	0
12/18/17	M	5:38:34	5:56:02	6:13:47	6:50:25	7:23:32	11:50:02			16:16:29	16:49:37	17:26:14	17:43:59	18:01:28	8:52:58	3.166	-23.402	1
12/19/17	Tu	5:39:08	5:56:36	6:14:22	6:51:00	7:24:08	11:50:32			16:16:54	16:50:02	17:26:40	17:44:25	18:01:53	8:52:46	2.671	-23.421	3
12/20/17	W	5:39:41	5:57:09	6:14:55	6:51:33	7:24:41	11:51:01			16:17:21	16:50:29	17:27:07	17:44:53	18:02:21	8:52:40	2.173	-23.432	7
12/21/17	Th	5:40:12	5:57:40	6:15:26	6:52:04	7:25:12	11:51:31			16:17:50	16:50:58	17:27:37	17:45:22	18:02:51	8:52:38	1.677	-23.435	13
12/22/17	F	5:40:41	5:58:10	6:15:55	6:52:33	7:25:41	11:52:01			16:18:22	16:51:30	17:28:08	17:45:54	18:03:22	8:52:41	1.165	-23.430	20
12/23/17	Sat	5:41:09	5:58:37	6:16:22	6:53:00	7:26:08	11:52:31			16:18:56	16:52:04	17:28:42	17:46:27	18:03:56	8:52:48	0.678	-23.418	28
12/24/17	Sun	5:41:34	5:59:03	6:16:48	6:53:25	7:26:32	11:53:01			16:19:33	16:52:40	17:29:17	17:47:02	18:04:30	8:53:00	0.181	-23.397	38
12/25/17	M	5:41:58	5:59:26	6:17:11	6:53:48	7:26:54	11:53:31			16:20:11	16:53:17	17:29:54	17:47:39	18:05:07	8:53:17	-0.315	-23.369	48
12/26/17	Tu	5:42:20	5:59:48	6:17:32	6:54:08	7:27:13	11:54:00			16:20:52	16:53:57	17:30:33	17:48:18	18:05:45	8:53:39	-0.809	-23.333	58
12/27/17	W	5:42:40	6:00:07	6:17:52	6:54:26	7:27:30	11:54:30			16:21:35	16:54:39	17:31:14	17:48:58	18:06:25	8:54:05	-1.300	-23.289	69
12/28/17	Th	5:42:58	6:00:25	6:18:09	6:54:42	7:27:44	11:54:59			16:22:20	16:55:22	17:31:56	17:49:40	18:07:07	8:54:35	-1.788	-23.237	79
12/29/17	F	5:43:14	6:00:41	6:18:24	6:54:56	7:27:56	11:55:28			16:23:07	16:56:08	17:32:40	17:50:23	18:07:50	8:55:11	-2.272	-23.178	87
12/30/17	Sat	5:43:28	6:00:54	6:18:37	6:55:07	7:28:06	11:55:57			16:23:56	16:56:55	17:33:25	17:51:08	18:08:34	8:55:50	-2.752	-23.111	94
12/31/17	Sun	5:43:40	6:01:06	6:18:47	6:55:16	7:28:12	11:56:26			16:24:47	16:57:44	17:34:13	17:51:55	18:09:20	8:56:35	-3.227	-23.036	99
01/01/18	M	5:43:50	6:01:15	6:18:56	6:55:23	7:28:17	11:56:54			16:25:40	16:58:34	17:35:01	17:52:42	18:10:07	8:57:23	-3.697	-22.953	100
01/02/18	Tu	5:43:58	6:01:22	6:19:02	6:55:27	7:28:18	11:57:22			16:26:35	16:59:27	17:35:51	17:53:32	18:10:56	8:58:17	-4.161	-22.863	98
01/03/18	W	5:44:04	6:01:27	6:19:07	6:55:29	7:28:18	11:57:49			16:27:32	17:00:20	17:36:43	17:54:23	18:11:46	8:59:14	-4.620	-22.765	94
01/04/18	Th	5:44:08	6:01:30	6:19:09	6:55:29	7:28:14	11:58:16			16:28:30	17:01:16	17:37:36	17:55:15	18:12:38	9:00:16	-5.072	-22.660	87
01/05/18	F	5:44:09	6:01:31	6:19:09	6:55:26	7:28:09	11:58:43			16:29:30	17:02:13	17:38:31	17:56:08	18:13:30	9:01:22	-5.517	-22.547	78
01/06/18	Sat	5:44:09	6:01:30	6:19:06	6:55:21	7:28:00	11:59:09			16:30:32	17:03:11	17:39:26	17:57:03	18:14:24	9:02:32	-5.955	-22.427	68
01/07/18	Sun	5:44:06	6:01:26	6:19:02	6:55:13	7:27:49	11:59:35			16:31:35	17:04:11	17:40:23	17:57:59	18:15:19	9:03:46	-6.386	-22.300	58
01/08/18	M	5:44:02	6:01:21	6:18:55	6:55:04	7:27:36	12:00:00			16:32:40	17:05:12	17:41:22	17:58:56	18:16:15	9:05:04	-6.808	-22.165	48
01/09/18	Tu	5:43:55	6:01:13	6:18:46	6:54:52	7:27:20	12:00:25			16:33:46	17:06:15	17:42:21	17:59:54	18:17:13	9:06:26	-7.222	-22.022	38
01/10/18	W	5:43:46	6:01:03	6:18:35	6:54:37	7:27:02	12:00:49			16:34:54	17:07:19	17:43:22	18:00:54	18:18:11	9:07:52	-7.627	-21.873	29
01/11/18	Th	5:43:35	6:00:51															

Date	DoW	Begin	Begin	Begin	Begin	Sun	Local	Sun	Sunset	End Civil	End Nautical	End 15-deg.	End	Length	Noon	Noon	9 PM
		Astro-nomical	15-deg.	Nautical	Civil								Astro-nomical		Eqn	sun declination	
		Twilight	Twilight	Twilight	Twilight	East	Noon	West	Sunset	Twilight	Twilight	Twilight	Twilight	of Day	(min.)	(deg.)	(pct.)
01/30/18	Tu	5:33:19	5:50:13	6:07:16	6:42:00		12:06:31		17:00:43	17:31:33	18:06:18	18:23:22	18:40:17	9:47:54	-13.316	-17.510	100
01/31/18	W	5:32:25	5:49:18	6:06:20	6:41:00		12:06:40		17:02:06	17:32:51	18:07:32	18:24:35	18:41:28	9:50:21	-13.462	-17.231	99
02/01/18	Th	5:31:30	5:48:22	6:05:22	6:39:58		12:06:48		17:03:29	17:34:09	18:08:46	18:25:47	18:42:40	9:52:51	-13.595	-16.946	96
02/02/18	F	5:30:33	5:47:24	6:04:23	6:38:55		12:06:55		17:04:52	17:35:27	18:10:01	18:27:01	18:43:52	9:55:22	-13.715	-16.657	91
02/03/18	Sat	5:29:34	5:46:24	6:03:22	6:37:50		12:07:01		17:06:15	17:36:46	18:11:16	18:28:14	18:45:05	9:57:56	-13.821	-16.362	83
02/04/18	Sun	5:28:33	5:45:22	6:02:18	6:36:43		12:07:07		17:07:38	17:38:04	18:12:30	18:29:27	18:46:18	10:00:31	-13.913	-16.063	74
02/05/18	M	5:27:30	5:44:19	6:01:14	6:35:34		12:07:12		17:09:02	17:39:23	18:13:45	18:30:41	18:47:31	10:03:07	-13.993	-15.760	65
02/06/18	Tu	5:26:26	5:43:13	6:00:07	6:34:24		12:07:15		17:10:25	17:40:42	18:15:01	18:31:55	18:48:44	10:05:46	-14.059	-15.451	55
02/07/18	W	5:25:19	5:42:06	5:58:59	6:33:12		12:07:19		17:11:49	17:42:01	18:16:16	18:33:10	18:49:57	10:08:26	-14.113	-15.139	45
02/08/18	Th	5:24:11	5:40:57	5:57:48	6:31:59		12:07:21		17:13:12	17:43:19	18:17:31	18:34:24	18:51:11	10:11:07	-14.153	-14.822	36
02/09/18	F	5:23:01	5:39:46	5:56:37	6:30:44		12:07:23		17:14:35	17:44:38	18:18:47	18:35:39	18:52:25	10:13:50	-14.181	-14.501	27
02/10/18	Sat	5:21:50	5:38:34	5:55:23	6:29:27		12:07:24		17:15:58	17:45:57	18:20:03	18:36:53	18:53:39	10:16:34	-14.196	-14.176	19
02/11/18	Sun	5:20:36	5:37:20	5:54:09	6:28:09		12:07:24		17:17:22	17:47:16	18:21:19	18:38:08	18:54:54	10:19:20	-14.198	-13.847	12
02/12/18	M	5:19:21	5:36:05	5:52:52	6:26:49		12:07:23		17:18:45	17:48:35	18:22:34	18:39:23	18:56:08	10:22:07	-14.188	-13.514	7
02/13/18	Tu	5:18:04	5:34:47	5:51:34	6:25:28		12:07:22		17:20:07	17:49:54	18:23:50	18:40:38	18:57:23	10:24:54	-14.166	-13.177	3
02/14/18	W	5:16:46	5:33:29	5:50:14	6:24:06		12:07:20		17:21:30	17:51:13	18:25:06	18:41:53	18:58:38	10:27:44	-14.131	-12.837	0
02/15/18	Th	5:15:26	5:32:08	5:48:53	6:22:42		12:07:17		17:22:53	17:52:31	18:26:22	18:43:09	18:59:53	10:30:34	-14.084	-12.494	0
02/16/18	F	5:14:04	5:30:46	5:47:31	6:21:17		12:07:14		17:24:15	17:53:50	18:27:38	18:44:24	19:01:08	10:33:25	-14.026	-12.147	2
02/17/18	Sat	5:12:41	5:29:23	5:46:07	6:19:50		12:07:09		17:25:37	17:55:08	18:28:54	18:45:40	19:02:23	10:36:17	-13.955	-11.797	5
02/18/18	Sun	5:11:16	5:27:58	5:44:42	6:18:23		12:07:04		17:26:59	17:56:26	18:30:10	18:46:55	19:03:39	10:39:10	-13.873	-11.443	11
02/19/18	M	5:09:50	5:26:32	5:43:15	6:16:54		12:06:59		17:28:20	17:57:45	18:31:26	18:48:11	19:04:55	10:42:04	-13.780	-11.087	18
02/20/18	Tu	5:08:22	5:25:04	5:41:47	6:15:24		12:06:52		17:29:41	17:59:03	18:32:42	18:49:27	19:06:11	10:44:59	-13.675	-10.728	27
02/21/18	W	5:06:53	5:23:35	5:40:17	6:13:52		12:06:45		17:31:02	18:00:20	18:33:58	18:50:42	19:07:27	10:47:54	-13.559	-10.366	37
02/22/18	Th	5:05:22	5:22:05	5:38:47	6:12:20		12:06:38		17:32:23	18:01:38	18:35:14	18:51:58	19:08:43	10:50:50	-13.432	-10.002	48
02/23/18	F	5:03:50	5:20:33	5:37:15	6:10:46		12:06:30		17:33:43	18:02:56	18:36:30	18:53:14	19:09:59	10:53:47	-13.295	-9.634	59
02/24/18	Sat	5:02:17	5:19:00	5:35:41	6:09:11		12:06:21		17:35:03	18:04:13	18:37:46	18:54:30	19:11:15	10:56:44	-13.147	-9.265	70
02/25/18	Sun	5:00:42	5:17:25	5:34:07	6:07:36		12:06:11		17:36:23	18:05:30	18:39:02	18:55:46	19:12:32	10:59:43	-12.989	-8.893	80
02/26/18	M	4:59:05	5:15:50	5:32:31	6:05:59		12:06:01		17:37:42	18:06:47	18:40:18	18:57:02	19:13:49	11:02:41	-12.821	-8.519	89
02/27/18	Tu	4:57:28	5:14:13	5:30:55	6:04:21		12:05:51		17:39:02	18:08:04	18:41:34	18:58:18	19:15:06	11:05:40	-12.644	-8.143	95
02/28/18	W	4:55:49	5:12:35	5:29:17	6:02:43		12:05:39		17:40:20	18:09:21	18:42:50	18:59:35	19:16:23	11:08:40	-12.458	-7.765	99
03/01/18	Th	4:54:09	5:10:55	5:27:38	6:01:03		12:05:28		17:41:39	18:10:37	18:44:06	19:00:51	19:17:40	11:11:40	-12.263	-7.386	100
03/02/18	F	4:52:28	5:09:15	5:25:58	5:59:23		12:05:16		17:42:57	18:11:53	18:45:22	19:02:07	19:18:58	11:14:41	-12.060	-7.004	98
03/03/18	Sat	4:50:45	5:07:34	5:24:17	5:57:42		12:05:03		17:44:15	18:13:10	18:46:38	19:03:24	19:20:16	11:17:42	-11.849	-6.621	94
03/04/18	Sun	4:49:01	5:05:51	5:22:36	5:56:00		12:04:50		17:45:33	18:14:26	18:47:54	19:04:41	19:21:34	11:20:43	-11.630	-6.236	88
03/05/18	M	4:47:16	5:04:08	5:20:53	5:54:17		12:04:36		17:46:50	18:15:42	18:49:10	19:05:58	19:22:52	11:23:44	-11.405	-5.850	80
03/06/18	Tu	4:45:31	5:02:23	5:19:09	5:52:33		12:04:22		17:48:07	18:16:58	18:50:26	19:07:15	19:24:11	11:26:46	-11.172	-5.462	72
03/07/18	W	4:43:43	5:00:37	5:17:25	5:50:49		12:04:08		17:49:24	18:18:14	18:51:43	19:08:33	19:25:30	11:29:49	-10.933	-5.074	63
03/08/18	Th	4:41:55	4:58:51	5:15:39	5:49:04		12:03:53		17:50:41	18:19:29	18:52:59	19:09:50	19:26:49	11:32:51	-10.688	-4.684	53
03/09/18	F	4:40:06	4:57:04	5:13:53	5:47:19		12:03:38		17:51:57	18:20:45	18:54:16	19:11:08	19:28:09	11:35:54	-10.437	-4.293	44
03/10/18	Sat	4:38:16	4:55:15	5:12:06	5:45:33		12:03:23		17:53:14	18:22:01	18:55:32	19:12:26	19:29:29	11:38:57	-10.181	-3.901	34
03/11/18	Sun*	4:36:25	4:53:26	5:10:18	5:43:46		12:03:07		18:54:30	19:23:16	19:56:49	20:13:44	20:30:49	11:42:00	-9.920	-3.508	26
03/12/18	M*	4:34:33	4:51:36	5:08:30	5:41:59		13:02:51		18:55:45	19:24:32	19:58:06	20:15:03	20:32:10	11:45:03	-9.653	-3.115	18
03/13/18	Tu*	4:32:40	4:49:46	5:06:41	5:40:12		13:02:35		18:57:01	19:25:47	19:59:23	20:16:22	20:33:31	11:48:07	-9.383	-2.721	11
03/14/18	W*	4:30:46	4:47:54	5:04:51	5:38:23		13:02:18		18:58:16	19:27:03	20:00:41	20:17:41	20:34:52	11:51:10	-9.108	-2.326	6
03/15/18	Th*	4:28:51	4:46:02	5:03:00	5:36:35		13:02:02		18:59:32	19:28:18	20:01:58	20:19:00	20:36:14	11:54:14	-8.829	-1.931	2
03/16/18	F*	4:26:56	4:44:09	5:01:09	5:34:46		13:01:45		19:00:47	19:29:33	20:03:16	20:20:20	20:37:37	11:57:18	-8.547	-1.536	0
03/17/18	Sat*	4:24:59	4:42:15	5:09:17	5:32:57		13:01:28		19:02:01	19:30:49	20:04:34	20:21:40	20:39:00	12:00:22	-8.261	-1.141	0
03/18/18	Sun*	4:23:02	4:40:21	5:07:25	5:31:07		13:01:10		19:03:16	19:32:04	20:05:52	20:23:00	20:40:23	12:03:25	-7.972	-0.745	3
03/19/18	M*	4:21:04	4:38:25	5:05:32	5:29:17	6:59:06	13:00:53	19:01:51	19:04:31	19:33:19	20:07:10	20:24:21	20:41:47	12:06:29	-7.681	-0.350	8
03/20/18	Tu*	4:19:05	4:36:30	5:03:39	5:27:27	6:56:12	13:00:35	18:59:55	19:05:45	19:34:35	20:08:28	20:25:41	20:43:11	12:09:33	-7.387	0.045	14
03/21/18	W*	4:17:05	4:34:33	5:01:45	5:25:36	6:54:22	13:00:17	18:58:00	19:06:59	19:35:50	20:09:47	20:27:03	20:44:36	12:12:37	-7.090	0.440	23
03/22/18	Th*	4:15:05	4:32:37	5:00:41	5:24:35	6:52:33	13:00:00	18:56:04	19:08:13	19:37:05	20:11:06	20:28:24	20:46:01	12:15:40	-6.792	0.835	33
03/23/18	F*	4:13:04	4:30:39	4:57:57	5:21:54	6:50:43	12:59:42	18:54:09	19:09:27	19:38:21	20:12:25	20:29:46	20:47:27	12:18:44	-6.492	1.229	44
03/24/18	Sat*	4:11:02	4:28:31	4:56:01	5:20:03	6:48:53	12:59:23	18:52:13	19:10:41	19:39:36	20:13:44	20:31:09	20:48:53	12:21:47	-6.191	1.623	56
03/25/18	Sun*	4:09:00	4:26:43	4:54:06	5:18:12	6:47:04	12:59:05	18:50:18	19:11:54	19:40:51	20:15:04	20:32:31	20:50:20	12:24:51	-5.889	2.016	67
03/26/18	M*	4:06:57	4:24:44	4:52:10	5:16:20	6:45:14	12:58:47	18:48:22	19:13:08	19:42:07	20:16:24	20:33:55	20:51:47	12:27:54	-5.586	2.408	77
03/27/18	Tu*	4:04:53	4:22:44	4:50:14	5:14:28	6:43:24	12:58:29	18:46:27	19:14:21	19:43:22	20:17:44	20:35:18	20:53:15	12:30:57	-5.283	2.799	86
03/28/18	W*	4:02:49	4:20:45	4:48:18	5:12:37	6:41:35	12:58:11	18:44:32	19:15:34	19:44:38	20:19:04	20:36:42	20:54:43	12:33:59	-4.980	3.190	93
03/29/18	Th*	4:00:44	4:18:44	4:46:14	5:10:45	6:39:46	12:57:53	18:42:37	19:16:48	19:45:53	20:20:25	20:38:06	20:56:12	12:37:02	-4.		

Date	DoW	Begin Astro-nomical Twilight	Begin 15-deg. Twilight	Begin Nautical Twilight	Begin Civil Twilight	Sunrise	Sun East	Local Noon	Sun West	Sunset	End Civil Twilight	End Nautical Twilight	End 15-deg. Twilight	End Astro-nomical Twilight	Length of Day	Noon Eqn Time (min.)	Noon sun declination (deg.)	9 PM Lunar Illum. (pct.)
04/16/18	M*	4:22:18	4:42:12	5:01:18	5:37:49	6:07:59	7:35:53	12:52:56	18:09:18	19:38:42	20:08:59	20:45:40	21:04:53	21:24:56	13:30:43	0.270	10.304	2
04/17/18	Tu*	4:20:08	4:40:10	4:59:23	5:36:03	6:06:18	7:37:11	12:52:42	18:07:33	19:39:55	20:10:17	20:47:08	21:06:28	21:26:39	13:33:37	0.499	10.656	5
04/18/18	W*	4:17:58	4:38:09	4:57:28	5:34:18	6:04:38	7:38:29	12:52:29	18:05:49	19:41:08	20:11:36	20:48:36	21:08:03	21:28:23	13:36:30	0.721	11.005	12
04/19/18	Th*	4:15:49	4:36:08	4:55:34	5:32:33	6:02:59	7:39:47	12:52:16	18:04:05	19:42:21	20:12:54	20:50:05	21:09:38	21:30:07	13:39:21	0.937	11.350	20
04/20/18	F*	4:13:39	4:34:07	4:53:40	5:30:49	6:01:21	7:41:05	12:52:03	18:02:22	19:43:34	20:14:13	20:51:34	21:11:14	21:31:52	13:42:13	1.146	11.693	30
04/21/18	Sat*	4:11:29	4:32:07	4:51:47	5:29:06	5:59:44	7:42:23	12:51:51	18:00:41	19:44:47	20:15:32	20:53:03	21:12:51	21:33:38	13:45:03	1.348	12.033	41
04/22/18	Sun*	4:09:20	4:30:07	4:49:54	5:27:24	5:58:08	7:43:41	12:51:39	17:59:00	19:46:00	20:16:51	20:54:32	21:14:28	21:35:25	13:47:52	1.543	12.369	53
04/23/18	M*	4:07:11	4:28:07	4:48:02	5:25:42	5:56:32	7:44:59	12:51:28	17:57:20	19:47:12	20:18:10	20:56:02	21:16:05	21:37:12	13:50:40	1.731	12.702	64
04/24/18	Tu*	4:05:02	4:26:08	4:46:11	5:24:02	5:54:58	7:46:16	12:51:17	17:55:41	19:48:25	20:19:29	20:57:32	21:17:42	21:39:00	13:53:27	1.911	13.031	74
04/25/18	W*	4:02:53	4:24:10	4:44:20	5:22:22	5:53:24	7:47:34	12:51:07	17:54:04	19:49:38	20:20:48	20:59:02	21:19:20	21:40:48	13:56:13	2.084	13.357	83
04/26/18	Th*	4:00:44	4:22:12	4:42:30	5:20:43	5:51:52	7:48:51	12:50:57	17:52:27	19:50:50	20:22:07	21:00:32	21:20:59	21:42:37	13:58:58	2.249	13.679	91
04/27/18	F*	3:58:36	4:20:14	4:40:41	5:19:05	5:50:21	7:50:08	12:50:48	17:50:52	19:52:02	20:23:26	21:02:03	21:22:38	21:44:27	14:01:42	2.405	13.997	96
04/28/18	Sat*	3:56:29	4:18:18	4:38:52	5:17:28	5:48:50	7:51:25	12:50:39	17:49:17	19:53:15	20:24:45	21:03:33	21:24:17	21:46:18	14:04:24	2.554	14.312	99
04/29/18	Sun*	3:54:21	4:16:22	4:37:05	5:15:52	5:47:21	7:52:42	12:50:30	17:47:44	19:54:27	20:26:03	21:05:04	21:25:56	21:48:08	14:07:05	2.694	14.622	100
05/01/18	Tu*	3:52:14	4:14:26	4:35:18	5:14:18	5:45:53	7:53:58	12:50:23	17:46:12	19:55:39	20:27:22	21:06:35	21:27:36	21:50:00	14:09:45	2.825	14.928	99
05/02/18	W*	3:50:08	4:12:32	4:33:32	5:12:44	5:44:27	7:55:15	12:50:15	17:44:42	19:56:50	20:28:41	21:08:06	21:29:16	21:51:52	14:12:24	2.947	15.231	95
05/03/18	Th*	3:48:02	4:10:38	4:31:47	5:11:12	5:43:01	7:56:31	12:50:08	17:43:13	19:58:02	20:30:00	21:09:37	21:30:56	21:53:44	14:15:00	3.060	15.529	91
05/04/18	M*	3:45:57	4:08:45	4:30:04	5:09:40	5:41:37	7:57:47	12:50:02	17:41:45	19:59:13	20:31:18	21:11:08	21:32:36	21:55:37	14:17:36	3.164	15.823	84
05/05/18	F*	3:43:53	4:06:54	4:28:21	5:08:10	5:40:15	7:59:02	12:49:57	17:40:18	20:00:24	20:32:36	21:12:39	21:34:17	21:57:31	14:20:10	3.258	16.112	77
05/06/18	Sat*	3:41:49	4:05:03	4:26:40	5:06:42	5:38:53	8:00:18	12:49:51	17:38:53	20:01:35	20:33:55	21:14:10	21:35:57	21:59:24	14:22:42	3.343	16.397	68
05/07/18	Sun*	3:39:46	4:03:13	4:24:59	5:05:14	5:37:33	8:01:33	12:49:47	17:37:30	20:02:46	20:35:13	21:15:41	21:37:38	22:01:18	14:25:12	3.419	16.678	59
05/08/18	M*	3:37:44	4:01:24	4:23:20	5:03:49	5:36:15	8:02:47	12:49:43	17:36:08	20:03:56	20:36:30	21:17:12	21:39:18	22:03:13	14:27:41	3.484	16.954	50
05/09/18	Tu*	3:35:43	3:59:37	4:21:43	5:02:24	5:34:58	8:04:02	12:49:40	17:34:47	20:05:06	20:37:48	21:18:43	21:40:59	22:05:07	14:30:08	3.540	17.225	40
05/10/18	W*	3:33:42	3:57:50	4:20:06	5:01:01	5:33:42	8:05:16	12:49:37	17:33:28	20:06:15	20:39:05	21:20:13	21:42:39	22:07:02	14:32:33	3.586	17.491	31
05/11/18	Th*	3:31:43	3:56:06	4:18:31	4:59:39	5:32:28	8:06:29	12:49:35	17:32:11	20:07:24	20:40:21	21:21:43	21:44:20	22:08:57	14:34:56	3.622	17.753	22
05/12/18	F*	3:29:45	3:54:22	4:16:58	4:58:20	5:31:16	8:07:42	12:49:33	17:30:55	20:08:33	20:41:38	21:23:13	21:46:00	22:10:52	14:37:17	3.649	18.010	14
05/13/18	Sat*	3:27:48	3:52:40	4:15:26	4:57:01	5:30:05	8:08:54	12:49:32	17:29:42	20:09:41	20:42:53	21:24:43	21:47:40	22:12:47	14:39:36	3.665	18.261	7
05/14/18	Sun*	3:25:52	3:50:59	4:13:56	4:55:44	5:28:56	8:10:06	12:49:32	17:28:29	20:10:49	20:44:09	21:26:12	21:49:19	22:14:41	14:41:53	3.672	18.508	3
05/15/18	M*	3:23:58	3:49:20	4:12:27	4:54:29	5:27:48	8:11:18	12:49:32	17:27:19	20:11:56	20:45:23	21:27:40	21:50:58	22:16:36	14:44:08	3.670	18.749	0
05/16/18	Tu*	3:22:05	3:47:42	4:11:00	4:53:16	5:26:43	8:12:28	12:49:33	17:26:10	20:13:03	20:46:38	21:29:08	21:52:37	22:18:30	14:46:20	3.657	18.985	1
05/17/18	W*	3:20:13	3:46:06	4:09:35	4:52:05	5:25:39	8:13:38	12:49:34	17:25:04	20:14:09	20:47:51	21:30:35	21:54:15	22:20:24	14:48:30	3.636	19.216	4
05/18/18	Th*	3:18:23	3:44:32	4:08:11	4:50:55	5:24:37	8:14:48	12:49:36	17:23:59	20:15:14	20:49:04	21:32:02	21:55:52	22:22:17	14:50:37	3.605	19.441	10
05/19/18	F*	3:16:34	3:42:59	4:06:49	4:49:47	5:23:36	8:15:56	12:49:38	17:22:56	20:16:19	20:50:16	21:33:27	21:57:28	22:24:10	14:52:42	3.565	19.661	18
05/20/18	Sat*	3:14:47	3:41:29	4:05:30	4:48:41	5:22:38	8:17:04	12:49:41	17:21:54	20:17:22	20:51:27	21:34:52	21:59:04	22:26:02	14:54:45	3.516	19.875	28
05/21/18	Sun*	3:13:02	3:40:00	4:04:12	4:47:37	5:21:41	8:18:10	12:49:45	17:20:55	20:18:25	20:52:37	21:36:16	22:00:38	22:27:53	14:56:44	3.458	20.084	38
05/22/18	M*	3:11:19	3:38:33	4:02:56	4:46:34	5:20:46	8:19:16	12:49:49	17:19:58	20:19:27	20:53:46	21:37:39	22:02:12	22:29:43	14:58:41	3.392	20.286	50
05/23/18	Tu*	3:09:38	3:37:09	4:01:42	4:45:34	5:19:53	8:20:21	12:49:53	17:19:03	20:20:28	20:54:55	21:39:00	22:03:44	22:31:33	15:00:35	3.317	20.483	61
05/24/18	W*	3:07:59	3:35:47	4:00:31	4:44:36	5:19:02	8:21:25	12:49:58	17:18:10	20:21:28	20:56:02	21:40:21	22:05:16	22:33:21	15:02:26	3.235	20.674	71
05/25/18	Th*	3:06:22	3:34:27	3:59:21	4:43:40	5:18:13	8:22:27	12:50:03	17:17:19	20:22:27	20:57:08	21:41:40	22:06:45	22:35:07	15:04:14	3.143	20.860	80
05/26/18	F*	3:04:47	3:33:09	3:58:14	4:42:46	5:17:26	8:23:29	12:50:09	17:16:30	20:23:25	20:58:13	21:42:57	22:08:14	22:36:52	15:05:59	3.044	21.039	88
05/27/18	Sat*	3:03:15	3:31:53	3:57:10	4:41:54	5:16:41	8:24:29	12:50:16	17:15:43	20:24:22	20:59:16	21:44:14	22:09:40	22:38:36	15:07:41	2.937	21.212	94
05/28/18	Sun*	3:01:45	3:30:41	3:56:07	4:41:05	5:15:58	8:25:29	12:50:23	17:14:58	20:25:18	21:00:18	21:45:28	22:11:05	22:40:18	15:09:19	2.822	21.379	98
05/29/18	M*	3:00:18	3:29:30	3:55:07	4:40:17	5:15:18	8:26:26	12:50:30	17:14:16	20:26:12	21:01:19	21:46:42	22:12:29	22:41:58	15:10:55	2.700	21.540	100
05/30/18	Tu*	2:58:53	3:28:23	3:54:10	4:39:32	5:14:39	8:27:23	12:50:38	17:13:35	20:27:06	21:02:19	21:47:53	22:13:50	22:43:36	15:12:27	2.570	21.694	100
05/31/18	W*	2:57:32	3:27:18	3:53:15	4:38:49	5:14:02	8:28:18	12:50:46	17:12:57	20:27:58	21:03:17	21:49:03	22:15:10	22:45:12	15:13:55	2.433	21.842	98
06/01/18	Th*	2:56:14	3:26:16	3:52:23	4:38:09	5:13:28	8:29:12	12:50:55	17:12:22	20:28:48	21:04:13	21:50:11	22:16:27	22:46:46	15:15:20	2.289	21.984	94
06/02/18	F*	2:54:58	3:25:17	3:51:33	4:37:30	5:12:56	8:30:04	12:51:04	17:11:48	20:29:38	21:05:08	21:51:17	22:17:43	22:48:17	15:16:42	2.137	22.120	89
06/03/18	Sat*	2:53:46	3:24:21	3:50:47	4:36:55	5:12:25	8:30:55	12:51:13	17:11:17	20:30:25	21:06:02	21:52:21	22:18:56	22:49:46	15:18:00	1.980	22.249	82
06/04/18	Sun*	2:52:38	3:23:28	3:50:03	4:36:21	5:11:58	8:31:45	12:51:23	17:10:48	20:31:12	21:06:53	21:53:23	22:20:07	22:51:12	15:19:14	1.816	22.372	75
06/05/18	M*	2:51:32	3:22:38	3:49:22	4:35:50	5:11:32	8:32:32	12:51:33	17:10:21	20:31:57	21:07:43	21:54:22	22:21:15	22:52:35	15:20:25	1.645	22.488	66
06/06/18	Tu*	2:50:31	3:21:51	3:48:43	4:35:22	5:11:09	8:33:19	12:51:44	17:09:57	20:32:40	21:08:32	21:55:20	22:22:20	22:53:55	15:21:32	1.469	22.598	56
06/07/18	W*	2:49:33	3:21:07	3:48:08	4:34:56	5:10:47	8:34:03	12:51:55	17:09:35	20:33:22	21:09:18	21:56:15	22:23:23	22:55:11	15:22:34	1.287	22.701	47
06/08/18	Th*	2:48:40	3:20:27	3:47:36	4:34:33	5:10:28	8:34:46	12:52:06	17:09:16	20:34:02	21:10:02	21:57:08	22:24:23	22:56:24	15:23:33	1.100	22.797	37
06/																		

Date	DoW	Begin	Begin	Begin	Begin	Sunrise	Sun East	Local Noon	Sun West	Sunset	End Civil	End Nautical	End 15-deg.	End	Length of Day	Noon Eqn Time (min.)	Noon sun declination (deg.)	9 PM Lunar Illum. (pct.)
		Astro-nomical Twilight	15-deg. Twilight	Nautical Twilight	Civil Twilight									Astro-nomical Twilight				
07/01/18	Sun*	2:49:52	3:22:31	3:50:08	4:37:37	5:13:49	8:41:22	12:57:06	17:12:57	20:40:08	21:16:17	22:03:40	22:31:10	23:03:39	15:26:19	-3.911	23.067	87
07/02/18	M*	2:50:52	3:23:20	3:50:51	4:38:14	5:14:23	8:41:10	12:57:17	17:13:33	20:39:56	21:16:01	22:03:17	22:30:41	23:02:58	15:25:33	-4.099	22.993	80
07/03/18	Tu*	2:51:56	3:24:13	3:51:37	4:38:53	5:14:58	8:40:55	12:57:28	17:14:11	20:39:41	21:15:43	22:02:51	22:30:08	23:02:13	15:24:43	-4.282	22.912	71
07/04/18	W*	2:53:03	3:25:08	3:52:26	4:39:34	5:15:35	8:40:38	12:57:39	17:14:50	20:39:25	21:15:22	22:02:21	22:29:32	23:01:24	15:23:49	-4.461	22.824	62
07/05/18	Th*	2:54:14	3:26:06	3:53:17	4:40:16	5:16:14	8:40:18	12:57:49	17:15:31	20:39:06	21:14:58	22:01:49	22:28:52	23:00:30	15:22:52	-4.634	22.730	52
07/06/18	F*	2:55:29	3:27:07	3:54:10	4:41:01	5:16:54	8:39:56	12:57:59	17:16:14	20:38:44	21:14:32	22:01:14	22:28:09	22:59:33	15:21:50	-4.802	22.630	42
07/07/18	Sat*	2:56:46	3:28:11	3:55:06	4:41:48	5:17:36	8:39:32	12:58:09	17:16:59	20:38:21	21:14:04	22:00:36	22:27:22	22:58:32	15:20:45	-4.963	22.522	31
07/08/18	Sun*	2:58:07	3:29:17	3:56:04	4:42:36	5:18:19	8:39:05	12:58:18	17:17:45	20:37:55	21:13:33	21:59:55	22:26:33	22:57:28	15:19:36	-5.119	22.409	22
07/09/18	M*	2:59:31	3:30:26	3:57:04	4:43:26	5:19:04	8:38:36	12:58:27	17:18:32	20:37:27	21:13:00	21:59:11	22:25:40	22:56:19	15:18:23	-5.269	22.289	13
07/10/18	Tu*	3:00:57	3:31:37	3:58:06	4:44:17	5:19:50	8:38:05	12:58:36	17:19:22	20:36:57	21:12:24	21:58:24	22:24:44	22:55:08	15:17:06	-5.411	22.162	6
07/11/18	W*	3:02:26	3:32:50	3:59:10	4:45:11	5:20:38	8:37:31	12:58:44	17:20:12	20:36:24	21:11:45	21:57:35	22:23:45	22:53:53	15:15:46	-5.547	22.029	2
07/12/18	Th*	3:03:58	3:34:05	4:00:16	4:46:05	5:21:27	8:36:55	12:58:52	17:21:04	20:35:49	21:11:05	21:56:43	22:22:43	22:52:34	15:14:23	-5.675	21.890	0
07/13/18	F*	3:05:31	3:35:23	4:01:23	4:47:02	5:22:17	8:36:17	12:58:59	17:21:58	20:35:13	21:10:22	21:55:48	22:21:38	22:51:13	15:12:55	-5.795	21.744	2
07/14/18	Sat*	3:07:07	3:36:42	4:02:33	4:47:59	5:23:09	8:35:37	12:59:06	17:22:52	20:34:34	21:09:36	21:54:50	22:20:31	22:49:49	15:11:25	-5.907	21.593	6
07/15/18	Sun*	3:08:45	3:38:03	4:03:44	4:48:58	5:24:01	8:34:54	12:59:12	17:23:48	20:33:52	21:08:49	21:53:51	22:19:21	22:48:22	15:09:51	-6.010	21.435	13
07/16/18	M*	3:10:24	3:39:26	4:04:56	4:49:58	5:24:55	8:34:09	12:59:17	17:24:45	20:33:09	21:07:59	21:52:48	22:18:08	22:46:53	15:08:14	-6.105	21.271	22
07/17/18	Tu*	3:12:06	3:40:50	4:06:10	4:51:00	5:25:50	8:33:22	12:59:23	17:25:43	20:32:24	21:07:07	21:51:43	22:16:52	22:45:20	15:06:34	-6.191	21.101	32
07/18/18	W*	3:13:48	3:42:16	4:07:25	4:52:02	5:26:45	8:32:32	12:59:27	17:26:42	20:31:36	21:06:12	21:50:36	22:15:34	22:43:46	15:04:51	-6.268	20.925	43
07/19/18	Th*	3:15:32	3:43:43	4:08:42	4:53:06	5:27:42	8:31:41	12:59:31	17:27:43	20:30:47	21:05:16	21:49:26	22:14:14	22:42:08	15:03:05	-6.335	20.744	53
07/20/18	F*	3:17:17	3:45:12	4:10:00	4:54:10	5:28:40	8:30:47	12:59:35	17:28:44	20:29:55	21:04:17	21:48:14	22:12:52	22:40:29	15:01:15	-6.392	20.556	63
07/21/18	Sat*	3:19:03	3:46:41	4:11:19	4:55:16	5:29:38	8:29:51	12:59:38	17:29:46	20:29:02	21:03:16	21:47:00	22:11:27	22:38:48	14:59:23	-6.440	20.363	73
07/22/18	Sun*	3:20:51	3:48:12	4:12:38	4:56:22	5:30:38	8:28:54	12:59:40	17:30:49	20:28:06	21:02:14	21:45:44	22:10:00	22:37:04	14:57:29	-6.478	20.164	81
07/23/18	M*	3:22:39	3:49:43	4:13:59	4:57:30	5:31:38	8:27:54	12:59:42	17:31:53	20:27:09	21:01:09	21:44:25	22:08:31	22:35:19	14:55:31	-6.507	19.959	88
07/24/18	Tu*	3:24:27	3:51:16	4:15:21	4:58:38	5:32:38	8:26:52	12:59:43	17:32:58	20:26:09	21:00:02	21:43:05	22:07:00	22:33:31	14:53:31	-6.525	19.749	93
07/25/18	W*	3:26:17	3:52:49	4:16:43	4:59:47	5:33:40	8:25:48	12:59:43	17:34:03	20:25:08	20:58:53	21:41:43	22:05:27	22:31:42	14:51:28	-6.533	19.534	97
07/26/18	Th*	3:28:07	3:54:23	4:18:07	5:00:56	5:34:42	8:24:42	12:59:43	17:35:09	20:24:05	20:57:43	21:40:19	22:03:52	22:29:52	14:49:23	-6.531	19.313	100
07/27/18	F*	3:29:57	3:55:57	4:19:30	5:02:07	5:35:45	8:23:35	12:59:42	17:36:16	20:23:00	20:56:30	21:38:53	22:02:15	22:27:59	14:47:15	-6.519	19.087	100
07/28/18	Sat*	3:31:48	3:57:32	4:20:55	5:03:18	5:36:48	8:22:25	12:59:41	17:37:23	20:21:53	20:55:16	21:37:25	22:00:37	22:26:06	14:45:05	-6.498	18.855	99
07/29/18	Sun*	3:33:39	3:59:08	4:22:20	5:04:29	5:37:52	8:21:14	12:59:39	17:38:31	20:20:45	20:54:00	21:35:55	21:58:57	22:24:11	14:42:53	-6.466	18.619	95
07/30/18	M*	3:35:30	4:00:44	4:23:45	5:05:41	5:38:57	8:20:01	12:59:37	17:39:40	20:19:35	20:52:43	21:34:24	21:57:16	22:22:14	14:40:38	-6.424	18.377	90
07/31/18	Tu*	3:37:21	4:02:20	4:25:11	5:06:53	5:40:02	8:18:46	12:59:34	17:40:49	20:18:23	20:51:24	21:32:52	21:55:33	22:20:17	14:38:22	-6.372	18.130	84
08/01/18	W*	3:39:12	4:03:56	4:26:38	5:08:06	5:41:07	8:17:30	12:59:30	17:41:58	20:17:10	20:50:03	21:31:17	21:53:48	22:18:18	14:36:03	-6.310	17.878	76
08/02/18	Th*	3:41:04	4:05:33	4:28:04	5:09:20	5:42:13	8:16:12	12:59:25	17:43:09	20:15:55	20:48:40	21:29:42	21:52:03	22:16:18	14:33:42	-6.238	17.622	67
08/03/18	F*	3:42:55	4:07:10	4:29:31	5:10:33	5:43:19	8:14:52	12:59:21	17:44:19	20:14:39	20:47:17	21:28:05	21:50:16	22:14:17	14:31:20	-6.157	17.361	57
08/04/18	Sat*	3:44:46	4:08:47	4:30:58	5:11:47	5:44:26	8:13:31	12:59:15	17:45:30	20:13:21	20:45:51	21:26:26	21:48:27	22:12:15	14:28:55	-6.065	17.095	46
08/05/18	Sun*	3:46:37	4:10:24	4:32:26	5:13:01	5:45:33	8:12:08	12:59:09	17:46:41	20:12:01	20:44:24	21:24:46	21:46:38	22:10:12	14:26:29	-5.965	16.824	35
08/06/18	M*	3:48:27	4:12:01	4:33:53	5:14:16	5:46:40	8:10:44	12:59:02	17:47:53	20:10:40	20:42:56	21:23:05	21:44:47	22:08:08	14:24:01	-5.854	16.549	25
08/07/18	Tu*	3:50:17	4:13:39	4:35:21	5:15:31	5:47:47	8:09:18	12:58:55	17:49:05	20:09:18	20:41:27	21:21:23	21:42:56	22:06:04	14:21:31	-5.734	16.269	15
08/08/18	W*	3:52:07	4:15:15	4:36:49	5:16:46	5:48:55	8:07:51	12:58:47	17:50:17	20:07:55	20:39:56	21:19:40	21:41:03	22:03:59	14:19:00	-5.604	15.985	8
08/09/18	Th*	3:53:57	4:16:52	4:38:16	5:18:01	5:50:03	8:06:22	12:58:39	17:51:29	20:06:30	20:38:24	21:17:55	21:39:10	22:01:53	14:16:27	-5.465	15.697	3
08/10/18	F*	3:55:46	4:18:29	4:39:44	5:19:16	5:51:11	8:04:52	12:58:30	17:52:42	20:05:03	20:36:51	21:16:10	21:37:15	21:59:46	14:13:52	-5.317	15.404	0
08/11/18	Sat*	3:57:34	4:20:05	4:41:11	5:20:31	5:52:19	8:03:21	12:58:21	17:53:55	20:03:36	20:35:16	21:14:23	21:35:20	21:57:39	14:11:16	-5.159	15.108	1
08/12/18	Sun*	3:59:22	4:21:42	4:42:39	5:21:46	5:53:28	8:01:48	12:58:11	17:55:08	20:02:07	20:33:41	21:12:36	21:33:24	21:55:31	14:08:39	-4.991	14.807	4
08/13/18	M*	4:01:10	4:23:17	4:44:06	5:23:02	5:54:36	8:00:14	12:58:00	17:56:21	20:00:37	20:32:04	21:10:47	21:31:27	21:53:23	14:06:01	-4.814	14.503	11
08/14/18	Tu*	4:02:56	4:24:53	4:45:33	5:24:17	5:55:45	7:58:39	12:57:49	17:57:34	19:59:06	20:30:26	21:08:58	21:29:29	21:51:14	14:03:21	-4.628	14.194	19
08/15/18	W*	4:04:42	4:26:28	4:47:00	5:25:32	5:56:54	7:57:03	12:57:37	17:58:47	19:57:34	20:28:47	21:07:07	21:27:31	21:49:05	14:00:40	-4.433	13.882	28
08/16/18	Th*	4:06:28	4:28:03	4:48:26	5:26:48	5:58:02	7:55:25	12:57:25	18:00:01	19:56:00	20:27:07	21:05:16	21:25:32	21:46:56	13:57:58	-4.228	13.566	38
08/17/18	F*	4:08:13	4:29:37	4:49:53	5:28:03	5:59:11	7:53:46	12:57:12	18:01:14	19:54:26	20:25:26	21:03:25	21:23:32	21:44:46	13:55:14	-4.015	13.247	48
08/18/18	Sat*	4:09:57	4:31:11	4:51:19	5:29:18	6:00:20	7:52:07	12:56:59	18:02:28	19:52:50	20:23:45	21:01:32	21:21:32	21:42:35	13:52:30	-3.793	12.924	58
08/19/18	Sun*	4:11:40	4:32:44	4:52:44	5:30:33	6:01:29	7:50:26	12:56:45	18:03:41	19:51:13	20:22:02	20:59:39	21:19:31	21:40:25	13:49:45	-3.562	12.598	68
08/20/18	M*	4:13:23	4:34:17	4:54:10	5:31:48	6:02:38	7:48:44	12:56:31	18:04:55	19:49:36	20:20:18	20:57:45	21:17:30	21:38:14	13:46:58	-3.323	12.268	76
08/21/18	Tu*	4:15:04	4:35:49	4:55:35	5:33:02	6:03:46	7:47:01	12:56:16	18:06:09	19:47:57	20:18:34	20:55:50	21:15:28	21:36:03	13:44:11	-3.076	11.936	84
08/22/18	W*	4:16:45	4:37:21	4:56:59	5:34:17	6:04:55	7:45:17	12:56:01	18:07:22	19:46:18	20:16:49	20:53:55	21					

Date	DoW	Begin	Begin	Begin	Begin	Sunrise	Sun	Local	Sun	Sunset	End	End 15-	End	Length	Noon	Noon	9 PM	
		Astro-nomical	15-deg.	Nautical	Civil		East	Noon	West		End Civil	Nautical	deg.		Astro-nomical	Eqn	sun decli-nation	Lunar Illum.
09/15/18	Sat*	4:53:26	5:11:23	5:28:58	6:03:20	6:32:21	7:00:27	12:48:18	18:36:55	19:03:28	19:32:25	20:06:39	20:24:09	20:42:01	12:31:07	4.885	2.827	42
09/16/18	Sun*	4:54:50	5:12:42	5:30:13	6:04:30	6:33:30	6:58:30	12:47:57	18:38:10	19:01:37	19:30:31	20:04:42	20:22:08	20:39:56	12:28:07	5.242	2.442	52
09/17/18	M*	4:56:12	5:14:01	5:31:28	6:05:41	6:34:39	6:56:33	12:47:35	18:39:24	18:59:45	19:28:38	20:02:44	20:20:08	20:37:51	12:25:06	5.599	2.055	61
09/18/18	Tu*	4:57:34	5:15:18	5:32:43	6:06:52	6:35:48	6:54:36	12:47:14	18:40:39	18:57:53	19:26:45	20:00:47	20:18:07	20:35:47	12:22:06	5.957	1.668	70
09/19/18	W*	4:58:55	5:16:36	5:33:58	6:08:03	6:36:57	6:52:39	12:46:52	18:41:54	18:56:02	19:24:52	19:58:50	20:16:07	20:33:43	12:19:05	6.314	1.281	78
09/20/18	Th*	5:00:16	5:17:53	5:35:12	6:09:13	6:38:06	6:50:41	12:46:31	18:43:09	18:54:10	19:22:59	19:56:53	20:14:08	20:31:40	12:16:04	6.670	0.893	86
09/21/18	F*	5:01:36	5:19:10	5:36:26	6:10:23	6:39:15	6:48:44	12:46:10	18:44:24	18:52:19	19:21:06	19:54:57	20:12:09	20:29:38	12:13:04	7.025	0.504	92
09/22/18	Sat*	5:02:56	5:20:26	5:37:40	6:11:34	6:40:24	6:46:46	12:45:49	18:45:39	18:50:27	19:19:13	19:53:01	20:10:11	20:27:36	12:10:03	7.379	0.116	96
09/23/18	Sun*	5:04:15	5:21:42	5:38:53	6:12:44	6:41:34	6:44:49	12:45:27	18:46:54	18:48:35	19:17:21	19:51:06	20:08:13	20:25:36	12:07:02	7.731	-0.273	99
09/24/18	M*	5:05:34	5:22:58	5:40:07	6:13:55	6:42:43	6:42:52	12:45:06		18:46:44	19:15:29	19:49:11	20:06:16	20:23:35	12:04:01	8.081	-0.663	100
09/25/18	Tu*	5:06:52	5:24:13	5:41:20	6:15:05	6:43:53		12:44:46		18:44:53	19:13:37	19:47:17	20:04:20	20:21:36	12:01:00	8.429	-1.052	99
09/26/18	W*	5:08:10	5:25:28	5:42:32	6:16:15	6:45:03		12:44:25		18:43:02	19:11:45	19:45:23	20:02:24	20:19:37	11:57:59	8.773	-1.441	96
09/27/18	Th*	5:09:28	5:26:43	5:43:45	6:17:26	6:46:13		12:44:04		18:41:11	19:09:54	19:43:30	20:00:29	20:17:40	11:54:58	9.114	-1.830	90
09/28/18	F*	5:10:45	5:27:57	5:44:58	6:18:36	6:47:23		12:43:44		18:39:21	19:08:04	19:41:37	19:58:34	20:15:43	11:51:58	9.452	-2.219	83
09/29/18	Sat*	5:12:02	5:29:12	5:46:10	6:19:47	6:48:34		12:43:24		18:37:30	19:06:13	19:39:45	19:56:40	20:13:47	11:48:57	9.785	-2.607	74
09/30/18	Sun*	5:13:18	5:30:26	5:47:23	6:20:57	6:49:44		12:43:04		18:35:40	19:04:24	19:37:54	19:54:47	20:11:51	11:45:56	10.113	-2.995	64
10/01/18	M*	5:14:34	5:31:39	5:48:35	6:22:08	6:50:55		12:42:45		18:33:51	19:02:34	19:36:03	19:52:55	20:09:57	11:42:56	10.437	-3.383	53
10/02/18	Tu*	5:15:50	5:32:53	5:49:47	6:23:19	6:52:06		12:42:26		18:32:02	19:00:46	19:34:13	19:51:04	20:08:04	11:39:55	10.755	-3.770	42
10/03/18	W*	5:17:05	5:34:06	5:50:59	6:24:30	6:53:18		12:42:07		18:30:13	18:58:58	19:32:24	19:49:14	20:06:12	11:36:55	11.068	-4.156	31
10/04/18	Th*	5:18:20	5:35:20	5:52:11	6:25:41	6:54:30		12:41:49		18:28:24	18:57:10	19:30:36	19:47:24	20:04:20	11:33:55	11.375	-4.542	21
10/05/18	F*	5:19:35	5:36:33	5:53:23	6:26:52	6:55:42		12:41:31		18:26:37	18:55:23	19:28:48	19:45:35	20:02:30	11:30:55	11.675	-4.926	12
10/06/18	Sat*	5:20:50	5:37:46	5:54:35	6:28:03	6:56:54		12:41:13		18:24:49	18:53:37	19:27:01	19:43:48	20:00:41	11:27:55	11.970	-5.310	6
10/07/18	Sun*	5:22:04	5:38:58	5:55:47	6:29:15	6:58:07		12:40:56		18:23:02	18:51:51	19:25:15	19:42:01	19:58:52	11:24:56	12.257	-5.692	2
10/08/18	M*	5:23:18	5:40:11	5:56:58	6:30:27	6:59:20		12:40:39		18:21:16	18:50:06	19:23:30	19:40:15	19:57:05	11:21:56	12.537	-6.074	0
10/09/18	Tu*	5:24:32	5:41:24	5:58:10	6:31:38	7:00:33		12:40:23		18:19:30	18:48:22	19:21:46	19:38:30	19:55:19	11:18:58	12.810	-6.454	1
10/10/18	W*	5:25:45	5:42:36	5:59:22	6:32:50	7:01:46		12:40:07		18:17:45	18:46:39	19:20:03	19:36:47	19:53:35	11:15:59	13.075	-6.832	5
10/11/18	Th*	5:26:59	5:43:48	6:00:34	6:34:02	7:03:00		12:39:51		18:16:01	18:44:56	19:18:21	19:35:04	19:51:51	11:13:01	13.332	-7.210	11
10/12/18	F*	5:28:12	5:45:01	6:01:45	6:35:14	7:04:14		12:39:36		18:14:17	18:43:14	19:16:40	19:33:22	19:50:08	11:10:03	13.582	-7.585	18
10/13/18	Sat*	5:29:25	5:46:13	6:02:57	6:36:27	7:05:29		12:39:22		18:12:34	18:41:34	19:15:00	19:31:42	19:48:27	11:07:05	13.823	-7.959	26
10/14/18	Sun*	5:30:38	5:47:25	6:04:09	6:37:39	7:06:43		12:39:08		18:10:52	18:39:54	19:13:20	19:30:02	19:46:47	11:04:09	14.055	-8.331	35
10/15/18	M*	5:31:50	5:48:37	6:05:21	6:38:52	7:07:58		12:38:55		18:09:10	18:38:14	19:11:42	19:28:24	19:45:08	11:01:12	14.279	-8.700	44
10/16/18	Tu*	5:33:03	5:49:48	6:06:32	6:40:05	7:09:14		12:38:42		18:07:30	18:36:36	19:10:05	19:26:47	19:43:31	10:58:16	14.493	-9.068	54
10/17/18	W*	5:34:15	5:51:00	6:07:44	6:41:18	7:10:29		12:38:29		18:05:50	18:34:59	19:08:30	19:25:11	19:41:54	10:55:21	14.698	-9.434	63
10/18/18	Th*	5:35:27	5:52:12	6:08:56	6:42:31	7:11:45		12:38:18		18:04:11	18:33:23	19:06:55	19:23:37	19:40:19	10:52:26	14.894	-9.797	72
10/19/18	F*	5:36:39	5:53:23	6:10:07	6:43:44	7:13:01		12:38:07		18:02:33	18:31:48	19:05:22	19:22:04	19:38:46	10:49:32	15.079	-10.158	80
10/20/18	Sat*	5:37:51	5:54:35	6:11:19	6:44:57	7:14:17		12:37:56		18:00:56	18:30:14	19:03:49	19:20:32	19:37:14	10:46:38	15.254	-10.517	87
10/21/18	Sun*	5:39:02	5:55:46	6:12:31	6:46:11	7:15:34		12:37:46		17:59:20	18:28:41	19:02:19	19:19:01	19:35:43	10:43:46	15.418	-10.873	93
10/22/18	M*	5:40:14	5:56:58	6:13:42	6:47:25	7:16:51		12:37:37		17:57:45	18:27:09	19:00:49	19:17:32	19:34:14	10:40:54	15.571	-11.226	97
10/23/18	Tu*	5:41:25	5:58:09	6:14:54	6:48:39	7:18:08		12:37:29		17:56:11	18:25:39	18:59:21	19:16:04	19:32:46	10:38:03	15.713	-11.576	99
10/24/18	W*	5:42:37	5:59:20	6:16:06	6:49:53	7:19:26		12:37:21		17:54:38	18:24:09	18:57:54	19:14:38	19:31:20	10:35:12	15.843	-11.923	100
10/25/18	Th*	5:43:48	6:00:32	6:17:18	6:51:07	7:20:44		12:37:14		17:53:06	18:22:41	18:56:28	19:13:13	19:29:55	10:32:23	15.962	-12.268	97
10/26/18	F*	5:44:59	6:01:43	6:18:29	6:52:21	7:22:02		12:37:07		17:51:36	18:21:15	18:55:04	19:11:49	19:28:32	10:29:34	16.068	-12.609	93
10/27/18	Sat*	5:46:10	6:02:54	6:19:41	6:53:36	7:23:20		12:37:02		17:50:07	18:19:49	18:53:42	19:10:28	19:27:10	10:26:47	16.162	-12.947	86
10/28/18	Sun*	5:47:20	6:04:05	6:20:53	6:54:50	7:24:39		12:36:57		17:48:39	18:18:25	18:52:20	19:09:07	19:25:50	10:24:00	16.244	-13.281	78
10/29/18	M*	5:48:31	6:05:16	6:22:05	6:56:05	7:25:57		12:36:53		17:47:12	18:17:03	18:51:01	19:07:48	19:24:32	10:21:15	16.312	-13.613	68
10/30/18	Tu*	5:49:42	6:06:27	6:23:17	6:57:20	7:27:17		12:36:49		17:45:47	18:15:42	18:49:43	19:06:31	19:23:15	10:18:30	16.367	-13.940	57
10/31/18	W*	5:50:52	6:07:38	6:24:29	6:58:35	7:28:36		12:36:47		17:44:23	18:14:22	18:48:26	19:05:16	19:22:01	10:15:47	16.409	-14.264	45
11/01/18	Th*	5:52:03	6:08:49	6:25:41	6:59:51	7:29:55		12:36:45		17:43:01	18:13:04	18:47:12	19:04:02	19:20:47	10:13:05	16.437	-14.585	34
11/02/18	F*	5:53:13	6:10:00	6:26:53	7:01:06	7:31:15		12:36:44		17:41:40	18:11:47	18:45:58	19:02:50	19:19:36	10:10:25	16.452	-14.901	24
11/03/18	Sat*	5:54:23	6:11:11	6:28:05	7:02:21	7:32:35		12:36:44		17:40:20	18:10:33	18:44:47	19:01:40	19:18:26	10:07:46	16.452	-15.213	15
11/04/18	Sun	4:55:33	5:12:22	5:29:17	6:03:37	6:33:55		11:36:45		16:39:02	17:09:19	17:43:37	18:00:31	18:17:19	10:05:08	16.439	-15.521	8
11/05/18	M	4:56:43	5:13:33	5:30:29	6:04:52	6:35:15		11:36:47		16:37:46	17:08:08	17:42:29	17:59:24	18:16:13	10:02:31	16.412	-15.825	3
11/06/18	Tu	4:57:53	5:14:43	5:31:41	6:06:07	6:36:35		11:36:49		16:36:31	17:06:58	17:41:23	17:58:19	18:15:08	9:59:57	16.371	-16.125	0
11/07/18	W	4:59:02	5:15:54	5:32:52	6:07:23	6:37:55		11:36:52		16:35:18	17:05:49	17:40:18	17:57:16	18:14:06	9:57:24	16.316	-16.420	0
11/08/18	Th	5:00:12	5:17:04	5:34:04	6:08:38	6:39:15		11:36:57		16:34:07	17:04:43	17:39:16	17:56:15	18:13:06	9:54:52	16.246	-16.711	3
11/09/18	F	5:01:21	5:18:14	5:35:15	6:09:53	6:40:35		11:37:02		16:32:58	17:03:38	17:38:15	17:55:15	18:12:07	9:52:23	16.163	-16.996	7
11/10/18	Sat	5:02:30	5:19:2															

Date	DoW	Begin	Begin	Begin	Begin	Sunrise	Sun East	Local Noon	Sun West	Sunset	End Civil	End Nautical	End 15-deg.	End Astro-nomical	Length of Day	Neon	Neon	9 PM
		Astro-nomical Twilight	15-deg. Twilight	Nautical Twilight	Civil Twilight											Eqn Time (min.)	sun declination (deg.)	
11/30/18	F	5:23:58	5:41:15	5:58:46	6:34:45	7:07:06		11:41:55		16:16:26	16:48:47	17:24:46	17:42:16	17:59:32	9:09:20	11.276	-21.718	37
12/01/18	Sat	5:24:56	5:42:14	5:59:46	6:35:48	7:08:14		11:42:17		16:16:04	16:48:29	17:24:31	17:42:03	17:59:20	9:07:51	10.903	-21.874	27
12/02/18	Sun	5:25:53	5:43:11	6:00:45	6:36:51	7:09:20		11:42:40		16:15:45	16:48:14	17:24:19	17:41:52	17:59:10	9:06:25	10.520	-22.022	18
12/03/18	M	5:26:49	5:44:08	6:01:43	6:37:52	7:10:25		11:43:04		16:15:28	16:48:01	17:24:09	17:41:43	17:59:02	9:05:04	10.126	-22.164	11
12/04/18	Tu	5:27:44	5:45:04	6:02:40	6:38:52	7:11:28		11:43:28		16:15:14	16:47:50	17:24:01	17:41:37	17:58:57	9:03:46	9.722	-22.298	5
12/05/18	W	5:28:38	5:45:59	6:03:36	6:39:50	7:12:30		11:43:53		16:15:02	16:47:42	17:23:56	17:41:32	17:58:53	9:02:32	9.308	-22.425	1
12/06/18	Th	5:29:31	5:46:53	6:04:30	6:40:48	7:13:31		11:44:18		16:14:53	16:47:36	17:23:53	17:41:30	17:58:52	9:01:22	8.885	-22.545	0
12/07/18	F	5:30:23	5:47:45	6:05:24	6:41:44	7:14:30		11:44:44		16:14:46	16:47:32	17:23:52	17:41:30	17:58:53	9:00:16	8.454	-22.658	1
12/08/18	Sat	5:31:13	5:48:37	6:06:16	6:42:39	7:15:28		11:45:11		16:14:42	16:47:31	17:23:53	17:41:33	17:58:56	8:59:15	8.014	-22.763	3
12/09/18	Sun	5:32:02	5:49:27	6:07:07	6:43:32	7:16:24		11:45:37		16:14:41	16:47:32	17:23:57	17:41:37	17:59:01	8:58:17	7.567	-22.861	8
12/10/18	M	5:32:51	5:50:15	6:07:57	6:44:23	7:17:18		11:46:05		16:14:42	16:47:36	17:24:03	17:41:44	17:59:09	8:57:24	7.113	-22.951	14
12/11/18	Tu	5:33:37	5:51:03	6:08:45	6:45:14	7:18:10		11:46:32		16:14:46	16:47:42	17:24:11	17:41:53	17:59:18	8:56:36	6.652	-23.034	21
12/12/18	W	5:34:23	5:51:49	6:09:31	6:46:02	7:19:01		11:47:00		16:14:52	16:47:51	17:24:21	17:42:03	17:59:29	8:55:51	6.186	-23.109	29
12/13/18	Th	5:35:07	5:52:33	6:10:17	6:46:49	7:19:49		11:47:29		16:15:01	16:48:01	17:24:33	17:42:16	17:59:43	8:55:11	5.714	-23.176	38
12/14/18	F	5:35:49	5:53:16	6:11:00	6:47:34	7:20:36		11:47:57		16:15:12	16:48:14	17:24:48	17:42:32	17:59:58	8:54:36	5.237	-23.236	47
12/15/18	Sat	5:36:30	5:53:58	6:11:42	6:48:17	7:21:21		11:48:26		16:15:26	16:48:30	17:25:05	17:42:49	18:00:16	8:54:05	4.756	-23.288	57
12/16/18	Sun	5:37:10	5:54:38	6:12:22	6:48:58	7:22:03		11:48:55		16:15:42	16:48:48	17:25:23	17:43:08	18:00:36	8:53:39	4.271	-23.332	66
12/17/18	M	5:37:48	5:55:16	6:13:01	6:49:38	7:22:44		11:49:24		16:16:01	16:49:07	17:25:44	17:43:29	18:00:57	8:53:17	3.783	-23.368	76
12/18/18	Tu	5:38:24	5:55:53	6:13:38	6:50:15	7:23:22		11:49:54		16:16:23	16:49:30	17:26:07	17:43:52	18:01:20	8:53:01	3.293	-23.397	84
12/19/18	W	5:38:59	5:56:27	6:14:13	6:50:51	7:23:58		11:50:23		16:16:47	16:49:54	17:26:32	17:44:17	18:01:46	8:52:48	2.800	-23.417	91
12/20/18	Th	5:39:32	5:57:01	6:14:46	6:51:24	7:24:32		11:50:53		16:17:13	16:50:21	17:26:59	17:44:45	18:02:13	8:52:41	2.306	-23.430	96
12/21/18	F	5:40:03	5:57:32	6:15:17	6:51:56	7:25:04		11:51:23		16:17:42	16:50:50	17:27:28	17:45:14	18:02:42	8:52:38	1.810	-23.435	99
12/22/18	Sat	5:40:33	5:58:01	6:15:47	6:52:25	7:25:33		11:51:53		16:18:13	16:51:21	17:27:59	17:45:44	18:03:13	8:52:39	1.314	-23.433	100
12/23/18	Sun	5:41:01	5:58:29	6:16:15	6:52:53	7:26:00		11:52:22		16:18:46	16:51:54	17:28:32	17:46:17	18:03:46	8:52:46	0.818	-23.422	97
12/24/18	M	5:41:27	5:58:55	6:16:40	6:53:18	7:26:25		11:52:52		16:19:22	16:52:29	17:29:06	17:46:52	18:04:20	8:52:57	0.322	-23.403	92
12/25/18	Tu	5:41:51	5:59:19	6:17:04	6:53:41	7:26:47		11:53:22		16:20:00	16:53:06	17:29:43	17:47:28	18:04:56	8:53:12	-0.172	-23.377	84
12/26/18	W	5:42:13	5:59:41	6:17:26	6:54:02	7:27:07		11:53:51		16:20:40	16:53:45	17:30:21	17:48:06	18:05:34	8:53:33	-0.666	-23.343	74
12/27/18	Th	5:42:34	6:00:01	6:17:45	6:54:20	7:27:25		11:54:21		16:21:22	16:54:26	17:31:02	17:48:46	18:06:13	8:53:58	-1.158	-23.301	64
12/28/18	F	5:42:52	6:00:19	6:18:03	6:54:37	7:27:40		11:54:50		16:22:07	16:55:10	17:31:44	17:49:27	18:06:55	8:54:27	-1.647	-23.251	53
12/29/18	Sat	5:43:09	6:00:35	6:18:19	6:54:51	7:27:52		11:55:19		16:22:54	16:55:55	17:32:27	17:50:11	18:07:37	8:55:01	-2.133	-23.194	42
12/30/18	Sun	5:43:23	6:00:50	6:18:32	6:55:03	7:28:02		11:55:48		16:23:42	16:56:41	17:33:13	17:50:55	18:08:21	8:55:40	-2.616	-23.128	31
12/31/18	M	5:43:36	6:01:02	6:18:44	6:55:13	7:28:10		11:56:17		16:24:33	16:57:30	17:33:59	17:51:42	18:09:07	8:56:23	-3.095	-23.055	22
01/01/19	Tu	5:43:47	6:01:12	6:18:53	6:55:20	7:28:15		11:56:46		16:25:26	16:58:20	17:34:48	17:52:29	18:09:54	8:57:11	-3.570	-22.975	14
01/02/19	W	5:43:55	6:01:20	6:19:00	6:55:25	7:28:17		11:57:14		16:26:20	16:59:13	17:35:38	17:53:19	18:10:43	8:58:03	-4.039	-22.886	8
01/03/19	Th	5:44:02	6:01:25	6:19:05	6:55:28	7:28:17		11:57:42		16:27:17	17:00:06	17:36:29	17:54:09	18:11:33	8:58:59	-4.502	-22.790	3
01/04/19	F	5:44:06	6:01:29	6:19:08	6:55:28	7:28:15		11:58:09		16:28:15	17:01:02	17:37:22	17:55:01	18:12:24	9:00:00	-4.960	-22.687	1
01/05/19	Sat	5:44:09	6:01:31	6:19:08	6:55:26	7:28:10		11:58:36		16:29:15	17:01:58	17:38:17	17:55:55	18:13:17	9:01:05	-5.410	-22.576	0
01/06/19	Sun	5:44:09	6:01:30	6:19:07	6:55:22	7:28:02		11:59:03		16:30:16	17:02:57	17:39:12	17:56:49	18:14:11	9:02:14	-5.853	-22.457	1
01/07/19	M	5:44:07	6:01:27	6:19:03	6:55:15	7:27:52		11:59:29		16:31:19	17:03:56	17:40:09	17:57:45	18:15:05	9:03:27	-6.288	-22.332	4
01/08/19	Tu	5:44:03	6:01:22	6:18:57	6:55:06	7:27:40		11:59:54		16:32:24	17:04:57	17:41:07	17:58:42	18:16:02	9:04:44	-6.714	-22.198	8
01/09/19	W	5:43:57	6:01:15	6:18:49	6:54:55	7:27:24		12:00:19		16:33:30	17:06:00	17:42:07	17:59:40	18:16:59	9:06:06	-7.132	-22.058	14
01/10/19	Th	5:43:49	6:01:06	6:18:38	6:54:41	7:27:07		12:00:44		16:34:37	17:07:03	17:43:07	18:00:39	18:17:57	9:07:31	-7.541	-21.910	22
01/11/19	F	5:43:38	6:00:55	6:18:25	6:54:25	7:26:47		12:01:08		16:35:46	17:08:08	17:44:08	18:01:39	18:18:56	9:09:00	-7.939	-21.756	30
01/12/19	Sat	5:43:26	6:00:41	6:18:10	6:54:07	7:26:24		12:01:31		16:36:56	17:09:14	17:45:11	18:02:41	18:19:56	9:10:32	-8.328	-21.594	39
01/13/19	Sun	5:43:11	6:00:25	6:17:53	6:53:46	7:25:59		12:01:54		16:38:07	17:10:21	17:46:14	18:03:43	18:20:57	9:12:08	-8.705	-21.425	49
01/14/19	M	5:42:54	6:00:07	6:17:34	6:53:23	7:25:31		12:02:16		16:39:20	17:11:29	17:47:19	18:04:46	18:21:59	9:13:48	-9.072	-21.250	59
01/15/19	Tu	5:42:35	5:59:46	6:17:12	6:52:57	7:25:02		12:02:37		16:40:33	17:12:38	17:48:24	18:05:50	18:23:02	9:15:31	-9.428	-21.067	69
01/16/19	W	5:42:13	5:59:24	6:16:48	6:52:30	7:24:29		12:02:58		16:41:47	17:13:47	17:49:30	18:06:54	18:24:05	9:17:18	-9.772	-20.878	79
01/17/19	Th	5:41:50	5:58:59	6:16:22	6:51:59	7:23:54		12:03:18		16:43:03	17:14:58	17:50:37	18:08:00	18:25:10	9:19:08	-10.104	-20.682	87
01/18/19	F	5:41:24	5:58:32	6:15:53	6:51:27	7:23:17		12:03:37		16:44:19	17:16:09	17:51:44	18:09:06	18:26:14	9:21:01	-10.424	-20.480	94
01/19/19	Sat	5:40:56	5:58:03	6:15:23	6:50:53	7:22:38		12:03:55		16:45:36	17:17:22	17:52:52	18:10:12	18:27:20	9:22:58	-10.732	-20.271	98
01/20/19	Sun	5:40:26	5:57:32	6:14:50	6:50:16	7:21:56		12:04:13		16:46:53	17:18:35	17:54:01	18:11:20	18:28:26	9:24:57	-11.027	-20.056	100
01/21/19	M	5:39:54	5:56:58	6:14:15	6:49:37	7:21:13		12:04:30		16:48:12	17:19:48	17:55:11	18:12:28	18:29:33	9:26:59	-11.310	-19.835	99
01/22/19	Tu	5:39:19	5:56:23	6:13:38	6:48:56	7:20:27		12:04:46		16:49:31	17:21:02	17:56:21	18:13:37	18:30:41	9:29:04	-11.580	-19.607	94
01/23/19	W	5:38:43	5:55:45	6:12:59	6:48:13	7:19:38		12:05:02		16:50:51	17:22:17	17:57:32	18:14:46	18:31:49	9:31:12	-11.837	-19.374	87
01/24/19	Th	5:38:05	5:55:06	6:12:18	6:47:27	7:18:48		12:05:16		16:52:11	17:23:32	17:58:43	18:15:56	18:32:57	9:33:23	-12.082	-19.134	79
01/25/19	F	5:37:24	5:54:24	6:11:35	6:46:40	7:17:56		12:05:30		16:53:32	17:24:48	17:59:55	18:17:06	18:34:07	9:35:36	-12.314	-18.889	69
01/26/19	Sat	5:36:41																

HVO -103.297529, 44.108178, Time Zone = MST/MDT

Date	DoW	Begin	Begin	Begin	Begin	Sunrise	Sun East	Local Noon	Sun West	Sunset	End	End 15-	End	End	Length	Noon	Noon	9 PM
		Astro-nomical	15-deg.	Nautical	Civil						Astro-nomical	Eqn	sun declination	Lunar Illum.				
02/14/19	Th	5:17:06	5:33:48	5:50:34	6:24:26	6:54:08		12:07:21		17:21:11	17:50:55	18:24:49	18:41:36	18:58:21	10:27:03	-14.161	-12.919	73
02/15/19	F	5:15:46	5:32:28	5:49:14	6:23:03	6:52:41		12:07:18		17:22:33	17:52:13	18:26:05	18:42:51	18:59:36	10:29:53	-14.115	-12.576	83
02/16/19	Sat	5:14:25	5:31:07	5:47:51	6:21:38	6:51:12		12:07:15		17:23:56	17:53:31	18:27:21	18:44:07	19:00:51	10:32:44	-14.057	-12.230	91
02/17/19	Sun	5:13:02	5:29:44	5:46:28	6:20:12	6:49:42		12:07:11		17:25:18	17:54:50	18:28:36	18:45:22	19:02:06	10:35:36	-13.987	-11.881	97
02/18/19	M	5:11:37	5:28:19	5:45:02	6:18:44	6:48:11		12:07:06		17:26:39	17:56:08	18:29:52	18:46:37	19:03:21	10:38:28	-13.905	-11.528	100
02/19/19	Tu	5:10:11	5:26:53	5:43:36	6:17:15	6:46:39		12:07:00		17:28:01	17:57:26	18:31:08	18:47:53	19:04:36	10:41:22	-13.812	-11.173	100
02/20/19	W	5:08:44	5:25:25	5:42:08	6:15:45	6:45:05		12:06:54		17:29:22	17:58:44	18:32:24	18:49:08	19:05:52	10:44:16	-13.708	-10.815	96
02/21/19	Th	5:07:15	5:23:57	5:40:39	6:14:14	6:43:31		12:06:47		17:30:43	18:00:02	18:33:40	18:50:24	19:07:08	10:47:12	-13.592	-10.454	91
02/22/19	F	5:05:44	5:22:26	5:39:08	6:12:42	6:41:56		12:06:40		17:32:03	18:01:19	18:34:56	18:51:40	19:08:24	10:50:07	-13.467	-10.090	83
02/23/19	Sat	5:04:12	5:20:55	5:37:37	6:11:09	6:40:19		12:06:31		17:33:24	18:02:37	18:36:12	18:52:55	19:09:40	10:53:04	-13.331	-9.724	74
02/24/19	Sun	5:02:39	5:19:22	5:36:04	6:09:34	6:38:42		12:06:23		17:34:44	18:03:54	18:37:28	18:54:11	19:10:57	10:56:01	-13.186	-9.355	64
02/25/19	M	5:01:04	5:17:48	5:34:30	6:07:59	6:37:04		12:06:13		17:36:03	18:05:11	18:38:44	18:55:27	19:12:13	10:58:59	-13.031	-8.983	53
02/26/19	Tu	4:59:29	5:16:13	5:32:54	6:06:22	6:35:25		12:06:04		17:37:23	18:06:28	18:40:00	18:56:44	19:13:30	11:01:58	-12.867	-8.610	43
02/27/19	W	4:57:51	5:14:36	5:31:18	6:04:45	6:33:45		12:05:53		17:38:42	18:07:45	18:41:16	18:58:00	19:14:47	11:04:57	-12.694	-8.234	34
02/28/19	Th	4:56:13	5:12:58	5:29:41	6:03:07	6:32:05		12:05:42		17:40:01	18:09:02	18:42:32	18:59:16	19:16:04	11:07:57	-12.512	-7.857	25
03/01/19	F	4:54:33	5:11:20	5:28:02	6:01:27	6:30:23		12:05:31		17:41:20	18:10:19	18:43:48	19:00:33	19:17:22	11:10:57	-12.322	-7.477	17
03/02/19	Sat	4:52:52	5:09:40	5:26:23	5:59:47	6:28:41		12:05:19		17:42:39	18:11:36	18:45:04	19:01:50	19:18:40	11:13:57	-12.123	-7.096	11
03/03/19	Sun	4:51:10	5:07:58	5:24:42	5:58:06	6:26:59		12:05:07		17:43:57	18:12:52	18:46:20	19:03:06	19:19:58	11:16:58	-11.917	-6.713	6
03/04/19	M	4:49:27	5:06:16	5:23:01	5:56:25	6:25:15		12:04:54		17:45:15	18:14:08	18:47:37	19:04:23	19:21:16	11:20:00	-11.703	-6.328	2
03/05/19	Tu	4:47:42	5:04:33	5:21:18	5:54:42	6:23:31		12:04:40		17:46:33	18:15:25	18:48:53	19:05:41	19:22:34	11:23:01	-11.482	-5.942	0
03/06/19	W	4:45:57	5:02:49	5:19:35	5:52:59	6:21:47		12:04:27		17:47:50	18:16:41	18:50:09	19:06:58	19:23:53	11:26:03	-11.253	-5.555	0
03/07/19	Th	4:44:10	5:01:04	5:17:51	5:51:15	6:20:02		12:04:13		17:49:07	18:17:57	18:51:26	19:08:15	19:25:12	11:29:06	-11.018	-5.166	2
03/08/19	F	4:42:22	4:59:18	5:16:05	5:49:31	6:18:16		12:03:58		17:50:24	18:19:13	18:52:43	19:09:33	19:26:32	11:32:08	-10.777	-4.776	6
03/09/19	Sat	4:40:34	4:57:31	5:14:19	5:47:45	6:16:30		12:03:43		17:51:41	18:20:29	18:53:59	19:10:51	19:27:51	11:35:11	-10.529	-4.385	11
03/10/19	Sun*	5:38:44	5:55:42	6:12:33	6:45:59	7:14:43		13:03:28		18:52:57	19:21:44	19:55:16	20:12:09	20:29:11	11:38:14	-10.275	-3.993	18
03/11/19	M*	5:36:53	5:53:54	6:10:45	6:44:13	7:12:56		13:03:12		18:54:13	19:23:00	19:56:33	20:13:27	20:30:32	11:41:17	-10.015	-3.601	27
03/12/19	Tu*	5:35:01	5:52:04	6:08:57	6:42:26	7:11:09		13:02:57		18:55:29	19:24:15	19:57:50	20:14:46	20:31:52	11:44:20	-9.750	-3.207	36
03/13/19	W*	5:33:08	5:50:13	6:07:08	6:40:38	7:09:21		13:02:40		18:56:45	19:25:31	19:59:07	20:16:05	20:33:13	11:47:24	-9.480	-2.813	47
03/14/19	Th*	5:31:14	5:48:22	6:05:18	6:38:50	7:07:33		13:02:24		18:58:00	19:26:46	20:00:24	20:17:24	20:34:35	11:50:27	-9.205	-2.419	58
03/15/19	F*	5:29:20	5:46:30	6:03:28	6:37:02	7:05:44		13:02:07		18:59:15	19:28:02	20:01:41	20:18:43	20:35:57	11:53:31	-8.926	-2.024	69
03/16/19	Sat*	5:27:24	5:44:37	6:01:37	6:35:13	7:03:56		13:01:50		19:00:30	19:29:17	20:02:59	20:20:02	20:37:19	11:56:35	-8.642	-1.629	79
03/17/19	Sun*	5:25:28	5:42:43	5:59:45	6:33:24	7:02:07		13:01:33		19:01:45	19:30:32	20:04:16	20:21:22	20:38:41	11:59:38	-8.355	-1.234	88
03/18/19	M*	5:23:31	5:40:49	5:57:53	6:31:34	7:00:17		13:01:15		19:02:59	19:31:47	20:05:34	20:22:42	20:40:04	12:02:42	-8.065	-0.839	94
03/19/19	Tu*	5:21:33	5:38:54	5:56:00	6:29:44	6:58:28	6:58:48	13:00:58	19:02:19	19:04:14	19:33:02	20:06:52	20:24:02	20:41:28	12:05:46	-7.771	-0.444	99
03/20/19	W*	5:19:34	5:36:58	5:54:07	6:27:54	6:56:39	7:00:08	13:00:40	19:00:23	19:05:28	19:34:17	20:08:10	20:25:23	20:42:52	12:08:49	-7.475	-0.049	100
03/21/19	Th*	5:17:34	5:35:02	5:52:13	6:26:03	6:54:49	7:01:28	13:00:22	18:58:28	19:06:42	19:35:32	20:09:29	20:26:44	20:44:16	12:11:53	-7.177	0.346	98
03/22/19	F*	5:15:34	5:33:05	5:50:19	6:24:12	6:52:59	7:02:48	13:00:04	18:56:32	19:07:56	19:36:48	20:10:47	20:28:05	20:45:41	12:14:57	-6.877	0.741	94
03/23/19	Sat*	5:13:33	5:31:08	5:48:24	6:22:21	6:51:10	7:04:08	12:59:46	18:54:37	19:09:10	19:38:03	20:12:06	20:29:27	20:47:06	12:18:00	-6.576	1.135	87
03/24/19	Sun*	5:11:31	5:29:10	5:46:29	6:20:30	6:49:20	7:05:27	12:59:28	18:52:41	19:10:23	19:39:18	20:13:25	20:30:49	20:48:32	12:21:04	-6.274	1.529	79
03/25/19	M*	5:09:29	5:27:11	5:44:34	6:18:38	6:47:30	7:06:47	12:59:10	18:50:46	19:11:37	19:40:33	20:14:45	20:32:12	20:49:59	12:24:07	-5.972	1.922	70
03/26/19	Tu*	5:07:26	5:25:13	5:42:38	6:16:47	6:45:40	7:08:06	12:58:52	18:48:50	19:12:50	19:41:49	20:16:05	20:33:35	20:51:26	12:27:10	-5.669	2.314	60
03/27/19	W*	5:05:23	5:23:13	5:40:42	6:14:55	6:43:51	7:09:25	12:58:34	18:46:55	19:14:04	19:43:04	20:17:25	20:34:58	20:52:54	12:30:13	-5.367	2.706	51
03/28/19	Th*	5:03:19	5:21:14	5:38:46	6:13:04	6:42:01	7:10:44	12:58:15	18:45:00	19:15:17	19:44:20	20:18:45	20:36:22	20:54:22	12:33:16	-5.065	3.096	41
03/29/19	F*	5:01:14	5:19:14	5:36:50	6:11:12	6:40:12	7:12:03	12:57:57	18:43:05	19:16:31	19:45:36	20:20:06	20:37:47	20:55:51	12:36:18	-4.764	3.486	32
03/30/19	Sat*	4:59:09	5:17:13	5:34:53	6:09:21	6:38:23	7:13:22	12:57:39	18:41:10	19:17:44	19:46:52	20:21:27	20:39:11	20:57:21	12:39:21	-4.465	3.875	23
03/31/19	Sun*	4:57:04	5:15:13	5:32:56	6:07:29	6:36:34	7:14:41	12:57:22	18:39:16	19:18:57	19:48:08	20:22:48	20:40:37	20:58:51	12:42:23	-4.166	4.262	16
04/01/19	M*	4:54:58	5:13:12	5:30:59	6:05:38	6:34:45	7:16:00	12:57:04	18:37:22	19:20:10	19:49:24	20:24:10	20:42:03	21:00:23	12:45:25	-3.870	4.648	10
04/02/19	Tu*	4:52:52	5:11:10	5:29:02	6:03:46	6:32:57	7:17:19	12:56:46	18:35:28	19:21:24	19:50:40	20:25:32	20:43:29	21:01:54	12:48:27	-3.575	5.033	5
04/03/19	W*	4:50:45	5:09:09	5:27:05	6:01:55	6:31:09	7:18:37	12:56:29	18:33:35	19:22:37	19:51:56	20:26:55	20:44:56	21:03:27	12:51:28	-3.283	5.417	2
04/04/19	Th*	4:48:37	5:07:07	5:25:07	6:00:04	6:29:21	7:19:56	12:56:11	18:31:42	19:23:50	19:53:13	20:28:18	20:46:23	21:05:00	12:54:29	-2.994	5.798	0
04/05/19	F*	4:46:30	5:05:05	5:23:10	5:58:13	6:27:34	7:21:15	12:55:54	18:29:49	19:25:03	19:54:29	20:29:41	20:47:51	21:06:34	12:57:29	-2.707	6.179	1
04/06/19	Sat*	4:44:22	5:03:03	5:21:13	5:56:22	6:25:47	7:22:33	12:55:37	18:27:57	19:26:16	19:55:46	20:31:05	20:49:20	21:08:08	13:00:29	-2.424	6.557	3
04/07/19	Sun*	4:42:14	5:01:01	5:19:16	5:54:32	6:24:00	7:23:52	12:55:20	18:26:05	19:27:29	19:57:03	20:32:29	20:50:49	21:09:43	13:03:29	-2.144	6.933	8
04/08/19	M*	4:40:05	4:58:59	5:17:18	5:52:42	6:22:14	7:25:10	12:55:04	18:24:14	19:28:42	19:58:20	20:33:53	20:52:18	21:11:19	13:06:29	-1.867	7.308	14
04/09/19	Tu*	4:37:56	4:56:57	5:15:21	5:50:52	6:20:28	7:26:29	12:54:47	18:22:23	19:29:55	19:59:38	20:35:18	20:53:48	21:12:56	13:09:27	-1.594	7.680	22
04/10/19	W*	4:35:47	4:54:54	5:13:24	5:49:03	6:18:43	7:27											

Date	DoW	Begin	Begin	Begin	Begin	Sunrise	Sun East	Local Noon	Sun West	Sunset	End Civil	End Nautical	End 15-deg.	End	Length of Day	Noon Eqn Time (min.)	Noon sun declination (deg.)	9 PM Lunar Illum. (pct.)
		Astro-nomical Twilight	15-deg. Twilight	Nautical Twilight	Civil Twilight									Astro-nomical Twilight				
05/01/19	W*	3:50:39	4:13:00	4:33:58	5:13:07	5:44:48	7:54:58	12:50:18	17:45:04	19:56:34	20:28:23	21:07:46	21:28:53	21:51:26	14:11:46	2.895	15.160	8
05/02/19	Th*	3:48:33	4:11:06	4:32:13	5:11:34	5:43:22	7:56:14	12:50:11	17:43:35	19:57:46	20:29:42	21:09:17	21:30:33	21:53:19	14:14:24	3.008	15.459	4
05/03/19	F*	3:46:28	4:09:13	4:30:29	5:10:03	5:41:58	7:57:30	12:50:05	17:42:07	19:58:58	20:31:01	21:10:48	21:32:14	21:55:12	14:17:00	3.111	15.754	1
05/04/19	Sat*	3:44:23	4:07:21	4:28:47	5:08:33	5:40:35	7:58:46	12:49:59	17:40:40	20:00:09	20:32:20	21:12:19	21:33:55	21:57:06	14:19:34	3.205	16.045	0
05/05/19	Sun*	3:42:19	4:05:30	4:27:05	5:07:04	5:39:14	8:00:02	12:49:54	17:39:15	20:01:20	20:33:38	21:13:51	21:35:35	21:58:59	14:22:07	3.290	16.331	2
05/06/19	M*	3:40:16	4:03:40	4:25:24	5:05:36	5:37:53	8:01:17	12:49:50	17:37:51	20:02:31	20:34:56	21:15:22	21:37:16	22:00:54	14:24:38	3.366	16.613	5
05/07/19	Tu*	3:38:14	4:01:51	4:23:45	5:04:10	5:36:35	8:02:32	12:49:46	17:36:28	20:03:41	20:36:14	21:16:53	21:38:57	22:02:48	14:27:07	3.432	16.890	11
05/08/19	W*	3:36:12	4:00:03	4:22:07	5:02:45	5:35:17	8:03:46	12:49:42	17:35:08	20:04:52	20:37:32	21:18:24	21:40:38	22:04:43	14:29:34	3.490	17.163	19
05/09/19	Th*	3:34:12	3:58:17	4:20:30	5:01:22	5:34:01	8:05:00	12:49:39	17:33:48	20:06:01	20:38:49	21:19:54	21:42:18	22:06:37	14:32:00	3.537	17.430	29
05/10/19	F*	3:32:12	3:56:31	4:18:55	5:00:00	5:32:47	8:06:14	12:49:37	17:32:31	20:07:10	20:40:06	21:21:24	21:43:59	22:08:32	14:34:24	3.576	17.693	40
05/11/19	Sat*	3:30:14	3:54:47	4:17:21	4:58:40	5:31:34	8:07:27	12:49:35	17:31:15	20:08:19	20:41:22	21:22:54	21:45:39	22:10:27	14:36:45	3.606	17.951	51
05/12/19	Sun*	3:28:17	3:53:05	4:15:49	4:57:21	5:30:23	8:08:40	12:49:34	17:30:00	20:09:27	20:42:38	21:24:24	21:47:18	22:12:22	14:39:05	3.626	18.204	62
05/13/19	M*	3:26:20	3:51:24	4:14:18	4:56:04	5:29:13	8:09:51	12:49:33	17:28:47	20:10:35	20:43:53	21:25:53	21:48:58	22:14:16	14:41:22	3.637	18.451	73
05/14/19	Tu*	3:24:26	3:49:44	4:12:49	4:54:48	5:28:05	8:11:03	12:49:33	17:27:37	20:11:42	20:45:08	21:27:21	21:50:37	22:16:11	14:43:37	3.639	18.694	83
05/15/19	W*	3:22:32	3:48:06	4:11:21	4:53:34	5:26:59	8:12:13	12:49:34	17:26:27	20:12:49	20:46:22	21:28:49	21:52:15	22:18:05	14:45:50	3.632	18.931	90
05/16/19	Th*	3:20:40	3:46:29	4:09:55	4:52:22	5:25:55	8:13:23	12:49:35	17:25:20	20:13:55	20:47:35	21:30:16	21:53:53	22:19:58	14:48:00	3.615	19.163	96
05/17/19	F*	3:18:49	3:44:55	4:08:31	4:51:12	5:24:52	8:14:32	12:49:36	17:24:15	20:15:00	20:48:48	21:31:42	21:55:30	22:21:52	14:50:08	3.590	19.389	99
05/18/19	Sat*	3:17:00	3:43:22	4:07:09	4:50:03	5:23:51	8:15:41	12:49:38	17:23:11	20:16:04	20:50:00	21:33:08	21:57:06	22:23:44	14:52:13	3.555	19.610	100
05/19/19	Sun*	3:15:13	3:41:50	4:05:49	4:48:57	5:22:52	8:16:48	12:49:41	17:22:09	20:17:08	20:51:11	21:34:33	21:58:42	22:25:36	14:54:16	3.511	19.825	98
05/20/19	M*	3:13:27	3:40:21	4:04:30	4:47:52	5:21:55	8:17:55	12:49:44	17:21:10	20:18:11	20:52:21	21:35:57	22:00:17	22:27:27	14:56:16	3.458	20.035	94
05/21/19	Tu*	3:11:44	3:38:54	4:03:14	4:46:49	5:20:59	8:19:01	12:49:48	17:20:12	20:19:13	20:53:30	21:37:19	22:01:50	22:29:18	14:58:14	3.395	20.239	89
05/22/19	W*	3:10:02	3:37:29	4:02:00	4:45:49	5:20:06	8:20:06	12:49:52	17:19:16	20:20:14	20:54:39	21:38:41	22:03:23	22:31:07	15:00:08	3.324	20.437	82
05/23/19	Th*	3:08:22	3:36:06	4:00:48	4:44:50	5:19:14	8:21:10	12:49:57	17:18:22	20:21:14	20:55:46	21:40:02	22:04:54	22:32:55	15:02:00	3.244	20.630	74
05/24/19	F*	3:06:45	3:34:46	3:59:38	4:43:53	5:18:25	8:22:13	12:50:02	17:17:31	20:22:13	20:56:52	21:41:21	22:06:24	22:34:42	15:03:49	3.155	20.816	65
05/25/19	Sat*	3:05:09	3:33:27	3:58:30	4:42:59	5:17:37	8:23:15	12:50:08	17:16:41	20:23:12	20:57:57	21:42:39	22:07:53	22:36:28	15:05:34	3.057	20.997	55
05/26/19	Sun*	3:03:37	3:32:11	3:57:25	4:42:07	5:16:52	8:24:15	12:50:15	17:15:54	20:24:09	20:59:01	21:43:56	22:09:20	22:38:12	15:07:17	2.951	21.171	46
05/27/19	M*	3:02:06	3:30:58	3:56:22	4:41:16	5:16:09	8:25:15	12:50:21	17:15:09	20:25:05	21:00:04	21:45:11	22:10:46	22:39:54	15:08:56	2.837	21.340	37
05/28/19	Tu*	3:00:39	3:29:47	3:55:22	4:40:29	5:15:27	8:26:13	12:50:29	17:14:26	20:26:00	21:01:06	21:46:25	22:12:10	22:41:35	15:10:33	2.714	21.502	28
05/29/19	W*	2:59:14	3:28:39	3:54:24	4:39:43	5:14:48	8:27:10	12:50:37	17:13:45	20:26:54	21:02:06	21:47:37	22:13:32	22:43:14	15:12:05	2.584	21.658	19
05/30/19	Th*	2:57:52	3:27:34	3:53:28	4:39:00	5:14:11	8:28:06	12:50:45	17:13:07	20:27:46	21:03:04	21:48:47	22:14:52	22:44:51	15:13:35	2.446	21.808	12
05/31/19	F*	2:56:33	3:26:31	3:52:36	4:38:19	5:13:36	8:29:00	12:50:54	17:12:31	20:28:37	21:04:01	21:49:56	22:16:10	22:46:25	15:15:01	2.301	21.952	6
06/01/19	Sat*	2:55:17	3:25:31	3:51:46	4:37:40	5:13:04	8:29:53	12:51:03	17:11:57	20:29:27	21:04:57	21:51:03	22:17:26	22:47:57	15:16:23	2.149	22.089	2
06/02/19	Sun*	2:54:04	3:24:35	3:50:58	4:37:04	5:12:33	8:30:45	12:51:12	17:11:25	20:30:16	21:05:51	21:52:07	22:18:40	22:49:27	15:17:42	1.990	22.220	0
06/03/19	M*	2:52:54	3:23:41	3:50:14	4:36:30	5:12:05	8:31:35	12:51:22	17:10:56	20:31:03	21:06:43	21:53:10	22:19:52	22:50:54	15:18:58	1.825	22.344	1
06/04/19	Tu*	2:51:48	3:22:50	3:49:32	4:35:59	5:11:39	8:32:23	12:51:32	17:10:29	20:31:48	21:07:34	21:54:10	22:21:01	22:52:17	15:20:09	1.654	22.462	4
06/05/19	W*	2:50:46	3:22:03	3:48:53	4:35:30	5:11:15	8:33:10	12:51:43	17:10:04	20:32:32	21:08:22	21:55:08	22:22:07	22:53:38	15:21:17	1.477	22.573	9
06/06/19	Th*	2:49:48	3:21:19	3:48:17	4:35:03	5:10:54	8:33:55	12:51:54	17:09:42	20:33:14	21:09:09	21:56:04	22:23:11	22:54:56	15:22:21	1.295	22.678	17
06/07/19	F*	2:48:53	3:20:38	3:47:44	4:34:39	5:10:34	8:34:38	12:52:05	17:09:22	20:33:55	21:09:54	21:56:58	22:24:12	22:56:10	15:23:21	1.109	22.776	26
06/08/19	Sat*	2:48:02	3:20:00	3:47:14	4:34:18	5:10:17	8:35:19	12:52:17	17:09:04	20:34:34	21:10:37	21:57:48	22:25:10	22:57:20	15:24:17	0.918	22.867	37
06/09/19	Sun*	2:47:16	3:19:26	3:46:47	4:33:59	5:10:02	8:35:59	12:52:28	17:08:49	20:35:11	21:11:18	21:58:37	22:26:04	22:58:27	15:25:09	0.723	22.952	49
06/10/19	M*	2:46:33	3:18:56	3:46:23	4:33:42	5:09:49	8:36:36	12:52:40	17:08:36	20:35:46	21:11:56	21:59:22	22:26:56	22:59:30	15:25:56	0.525	23.030	60
06/11/19	Tu*	2:45:55	3:18:29	3:46:02	4:33:28	5:09:39	8:37:12	12:52:52	17:08:25	20:36:19	21:12:33	22:00:05	22:27:45	23:00:29	15:26:40	0.323	23.101	71
06/12/19	W*	2:45:21	3:18:05	3:45:45	4:33:17	5:09:31	8:37:45	12:53:05	17:08:17	20:36:51	21:13:07	22:00:45	22:28:30	23:01:23	15:27:20	0.118	23.165	80
06/13/19	Th*	2:44:52	3:17:46	3:45:30	4:33:08	5:09:25	8:38:17	12:53:17	17:08:11	20:37:20	21:13:39	22:01:23	22:29:12	23:02:14	15:27:56	-0.089	23.223	88
06/14/19	F*	2:44:28	3:17:29	3:45:19	4:33:02	5:09:21	8:38:46	12:53:30	17:08:07	20:37:48	21:14:09	22:01:57	22:29:50	23:03:00	15:28:27	-0.299	23.273	94
06/15/19	Sat*	2:44:08	3:17:17	3:45:10	4:32:58	5:09:19	8:39:14	12:53:42	17:08:06	20:38:13	21:14:37	22:02:28	22:30:25	23:03:41	15:28:54	-0.510	23.317	98
06/16/19	Sun*	2:43:52	3:17:08	3:45:05	4:32:56	5:09:20	8:39:39	12:53:55	17:08:07	20:38:37	21:15:02	22:02:57	22:30:56	23:04:18	15:29:17	-0.723	23.354	100
06/17/19	M*	2:43:42	3:17:03	3:45:03	4:32:58	5:09:23	8:40:02	12:54:08	17:08:10	20:38:59	21:15:25	22:03:22	22:31:24	23:04:50	15:29:36	-0.938	23.384	99
06/18/19	Tu*	2:43:37	3:17:02	3:45:04	4:33:01	5:09:28	8:40:23	12:54:21	17:08:16	20:39:18	21:15:45	22:03:44	22:31:48	23:05:17	15:29:50	-1.153	23.407	97
06/19/19	W*	2:43:36	3:17:05	3:45:09	4:33:08	5:09:35	8:40:42	12:54:34	17:08:24	20:39:35	21:16:03	22:04:04	22:32:09	23:05:40	15:30:00	-1.370	23.424	92
06/20/19	Th*	2:43:40	3:17:11	3:45:16	4:33:16	5:09:44	8:40:59	12:54:47	17:08:34	20:39:51	21:16:19	22:04:20	22:32:25	23:05:57	15:30:06	-1.586	23.433	87
06/21/19	F*	2:43:49	3:17:21	3:45:27	4:33:28	5:09:56	8:41:13	12:55:00	17:08:47	20:40:04	21:16:32	22:04:33	22:32:38	23:06:10	15:30:08	-1.803	23.436	79
06/22/19	Sat*	2:44:03	3:17:35	3:45:40	4:33:41	5:10:10	8:41:25	12:55:13	17:09:02	20:40:15	21:16:42	22:04:43	22:3					

Date	DoW	Begin	Begin	Begin	Begin	Sunrise	Sun	Local	Sun	Sunset	End Civil	End Nautical	End 15-deg.	End	Length	Noon Eqn	Noon sun declination	9 PM Lunar
		Astro-nomical	15-deg.	Nautical	Civil									Astro-nomical				
07/16/19	Tu*	3:10:01	3:39:07	4:04:40	4:49:45	5:24:43	8:34:21	12:59:17	17:24:32	20:33:21	21:08:12	21:53:04	22:18:27	22:47:16	15:08:38	-6.093	21.311	100
07/17/19	W*	3:11:42	3:40:31	4:05:53	4:50:46	5:25:37	8:33:34	12:59:22	17:25:30	20:32:36	21:07:20	21:52:00	22:17:12	22:45:44	15:06:59	-6.178	21.143	99
07/18/19	Th*	3:13:24	3:41:56	4:07:08	4:51:48	5:26:33	8:32:45	12:59:27	17:26:29	20:31:49	21:06:27	21:50:53	22:15:54	22:44:10	15:05:16	-6.254	20.969	95
07/19/19	F*	3:15:07	3:43:23	4:08:24	4:52:51	5:27:29	8:31:54	12:59:31	17:27:29	20:31:00	21:05:30	21:49:44	22:14:35	22:42:33	15:03:31	-6.322	20.788	91
07/20/19	Sat*	3:16:52	3:44:51	4:09:41	4:53:55	5:28:26	8:31:01	12:59:35	17:28:30	20:30:08	21:04:32	21:48:32	22:13:12	22:40:54	15:01:42	-6.380	20.602	84
07/21/19	Sun*	3:18:38	3:46:20	4:11:00	4:55:00	5:29:24	8:30:06	12:59:37	17:29:31	20:29:15	21:03:32	21:47:19	22:11:48	22:39:13	14:59:51	-6.429	20.411	77
07/22/19	M*	3:20:25	3:47:50	4:12:19	4:56:07	5:30:24	8:29:08	12:59:40	17:30:34	20:28:20	21:02:30	21:46:03	22:10:22	22:37:30	14:57:57	-6.469	20.213	68
07/23/19	Tu*	3:22:13	3:49:21	4:13:40	4:57:14	5:31:23	8:28:09	12:59:42	17:31:38	20:27:23	21:01:25	21:44:45	22:08:53	22:35:45	14:56:00	-6.500	20.010	59
07/24/19	W*	3:24:01	3:50:53	4:15:01	4:58:22	5:32:24	8:27:08	12:59:43	17:32:42	20:26:24	21:00:19	21:43:25	22:07:23	22:33:58	14:54:00	-6.521	19.801	49
07/25/19	Th*	3:25:51	3:52:26	4:16:24	4:59:31	5:33:26	8:26:05	12:59:44	17:33:48	20:25:24	20:59:11	21:42:04	22:05:50	22:32:10	14:51:58	-6.533	19.587	39
07/26/19	F*	3:27:40	3:54:00	4:17:47	5:00:40	5:34:28	8:24:59	12:59:44	17:34:54	20:24:21	20:58:01	21:40:40	22:04:16	22:30:20	14:49:53	-6.535	19.367	30
07/27/19	Sat*	3:29:31	3:55:35	4:19:11	5:01:50	5:35:30	8:23:52	12:59:43	17:36:00	20:23:17	20:56:49	21:39:15	22:02:40	22:28:28	14:47:46	-6.528	19.142	20
07/28/19	Sun*	3:31:22	3:57:10	4:20:35	5:03:01	5:36:34	8:22:43	12:59:42	17:37:08	20:22:11	20:55:35	21:37:47	22:01:02	22:26:35	14:45:37	-6.510	18.912	12
07/29/19	M*	3:33:13	3:58:45	4:22:00	5:04:13	5:37:38	8:21:33	12:59:41	17:38:16	20:21:03	20:54:20	21:36:18	21:59:23	22:24:40	14:43:25	-6.483	18.676	6
07/30/19	Tu*	3:35:04	4:00:22	4:23:26	5:05:25	5:38:42	8:20:20	12:59:39	17:39:24	20:19:53	20:53:03	21:34:48	21:57:42	22:22:44	14:41:11	-6.446	18.436	1
07/31/19	W*	3:36:55	4:01:58	4:24:52	5:06:37	5:39:47	8:19:06	12:59:36	17:40:34	20:18:42	20:51:44	21:33:16	21:55:59	22:20:47	14:38:55	-6.400	18.190	0
08/01/19	Th*	3:38:47	4:03:35	4:26:18	5:07:50	5:40:53	8:17:50	12:59:32	17:41:43	20:17:29	20:50:24	21:31:42	21:54:15	22:18:48	14:36:37	-6.342	17.940	2
08/02/19	F*	3:40:38	4:05:12	4:27:45	5:09:03	5:41:59	8:16:32	12:59:28	17:42:53	20:16:15	20:49:02	21:30:07	21:52:30	22:16:48	14:34:16	-6.275	17.684	6
08/03/19	Sat*	3:42:30	4:06:49	4:29:12	5:10:17	5:43:05	8:15:13	12:59:24	17:44:04	20:14:59	20:47:39	21:28:30	21:50:43	22:14:48	14:31:54	-6.198	17.424	13
08/04/19	Sun*	3:44:21	4:08:26	4:30:39	5:11:31	5:44:11	8:13:52	12:59:18	17:45:15	20:13:41	20:46:14	21:26:52	21:48:55	22:12:46	14:29:30	-6.110	17.159	22
08/05/19	M*	3:46:12	4:10:03	4:32:07	5:12:45	5:45:18	8:12:30	12:59:12	17:46:26	20:12:22	20:44:47	21:25:12	21:47:06	22:10:43	14:27:04	-6.011	16.889	32
08/06/19	Tu*	3:48:02	4:11:40	4:33:34	5:14:00	5:46:25	8:11:06	12:59:06	17:47:37	20:11:02	20:43:19	21:23:32	21:45:16	22:08:40	14:24:36	-5.903	16.615	43
08/07/19	W*	3:49:53	4:13:17	4:35:02	5:15:14	5:47:33	8:09:40	12:58:59	17:48:49	20:09:40	20:41:50	21:21:50	21:43:24	22:06:35	14:22:07	-5.784	16.337	54
08/08/19	Th*	3:51:43	4:14:54	4:36:29	5:16:29	5:48:40	8:08:13	12:58:51	17:50:01	20:08:16	20:40:20	21:20:06	21:41:32	22:04:30	14:19:36	-5.655	16.054	65
08/09/19	F*	3:53:32	4:16:31	4:37:57	5:17:44	5:49:48	8:06:45	12:58:43	17:51:13	20:06:52	20:38:48	21:18:22	21:39:39	22:02:24	14:17:04	-5.516	15.767	74
08/10/19	Sat*	3:55:21	4:18:07	4:39:24	5:18:59	5:50:56	8:05:15	12:58:34	17:52:26	20:05:26	20:37:15	21:16:37	21:37:44	22:00:18	14:14:30	-5.367	15.475	83
08/11/19	Sun*	3:57:09	4:19:43	4:40:51	5:20:14	5:52:04	8:03:44	12:58:24	17:53:38	20:03:58	20:35:40	21:14:50	21:35:49	21:58:11	14:11:54	-5.208	15.180	90
08/12/19	M*	3:58:57	4:21:19	4:42:19	5:21:29	5:53:12	8:02:12	12:58:14	17:54:51	20:02:30	20:34:05	21:13:03	21:33:53	21:56:03	14:09:17	-5.040	14.880	95
08/13/19	Tu*	4:00:45	4:22:55	4:43:46	5:22:44	5:54:21	8:00:38	12:58:04	17:56:04	20:01:00	20:32:28	21:11:14	21:31:56	21:53:55	14:06:39	-4.862	14.577	98
08/14/19	W*	4:02:31	4:24:30	4:45:13	5:24:00	5:55:29	7:59:03	12:57:52	17:57:17	19:59:29	20:30:50	21:09:25	21:29:58	21:51:46	14:04:00	-4.675	14.269	100
08/15/19	Th*	4:04:17	4:26:05	4:46:39	5:25:15	5:56:37	7:57:27	12:57:41	17:58:30	19:57:57	20:29:12	21:07:35	21:28:00	21:49:37	14:01:19	-4.479	13.958	100
08/16/19	F*	4:06:03	4:27:40	4:48:06	5:26:30	5:57:46	7:55:49	12:57:28	17:59:43	19:56:23	20:27:32	21:05:44	21:26:01	21:47:27	13:58:37	-4.275	13.644	98
08/17/19	Sat*	4:07:47	4:29:14	4:49:32	5:27:45	5:58:55	7:54:11	12:57:15	18:00:57	19:54:49	20:25:51	21:03:52	21:24:02	21:45:18	13:55:54	-4.061	13.325	94
08/18/19	Sun*	4:09:31	4:30:48	4:50:58	5:29:00	6:00:03	7:52:31	12:57:02	18:02:10	19:53:14	20:24:10	21:02:00	21:22:01	21:43:07	13:53:10	-3.840	13.004	89
08/19/19	M*	4:11:15	4:32:21	4:52:23	5:30:15	6:01:12	7:50:51	12:56:48	18:03:23	19:51:37	20:22:27	21:00:07	21:20:01	21:40:57	13:50:25	-3.610	12.678	82
08/20/19	Tu*	4:12:57	4:33:54	4:53:49	5:31:29	6:02:21	7:49:09	12:56:34	18:04:37	19:50:00	20:20:44	20:58:13	21:18:00	21:38:46	13:47:39	-3.372	12.350	74
08/21/19	W*	4:14:39	4:35:26	4:55:14	5:32:44	6:03:29	7:47:26	12:56:19	18:05:50	19:48:22	20:19:00	20:56:18	21:15:58	21:36:35	13:44:52	-3.127	12.018	65
08/22/19	Th*	4:16:20	4:36:58	4:56:39	5:33:59	6:04:38	7:45:43	12:56:04	18:07:04	19:46:42	20:17:15	20:54:24	21:13:56	21:34:24	13:42:04	-2.874	11.683	55
08/23/19	F*	4:18:01	4:38:30	4:58:03	5:35:13	6:05:47	7:43:58	12:55:49	18:08:18	19:45:02	20:15:29	20:52:28	21:11:54	21:32:13	13:39:16	-2.615	11.345	45
08/24/19	Sat*	4:19:41	4:40:00	4:59:27	5:36:27	6:06:56	7:42:13	12:55:33	18:09:32	19:43:22	20:13:43	20:50:32	21:09:52	21:30:02	13:36:26	-2.348	11.003	35
08/25/19	Sun*	4:21:20	4:41:31	5:00:51	5:37:42	6:08:04	7:40:27	12:55:16	18:10:45	19:41:40	20:11:56	20:48:36	21:07:49	21:27:51	13:33:36	-2.075	10.659	25
08/26/19	M*	4:22:58	4:43:01	5:02:14	5:38:56	6:09:13	7:38:40	12:54:59	18:11:59	19:39:57	20:10:08	20:46:39	21:05:46	21:25:40	13:30:44	-1.795	10.312	15
08/27/19	Tu*	4:24:35	4:44:30	5:03:37	5:40:10	6:10:22	7:36:52	12:54:42	18:13:13	19:38:14	20:08:20	20:44:42	21:03:42	21:23:28	13:27:52	-1.509	9.963	8
08/28/19	W*	4:26:12	4:45:59	5:05:00	5:41:24	6:11:31	7:35:03	12:54:25	18:14:27	19:36:31	20:06:31	20:42:45	21:01:39	21:21:17	13:25:00	-1.217	9.610	3
08/29/19	Th*	4:27:48	4:47:27	5:06:22	5:42:37	6:12:39	7:33:14	12:54:07	18:15:41	19:34:46	20:04:42	20:40:47	20:59:35	21:19:06	13:22:07	-0.919	9.255	0
08/30/19	F*	4:29:23	4:48:55	5:07:44	5:43:51	6:13:48	7:31:24	12:53:49	18:16:55	19:33:01	20:02:52	20:38:49	20:57:31	21:16:55	13:19:13	-0.615	8.898	1
08/31/19	Sat*	4:30:58	4:50:22	5:09:05	5:45:04	6:14:57	7:29:34	12:53:30	18:18:08	19:31:15	20:01:02	20:36:51	20:55:28	21:14:44	13:16:18	-0.306	8.538	5
09/01/19	Sun*	4:32:32	4:51:49	5:10:26	5:46:17	6:16:06	7:27:42	12:53:11	18:19:22	19:29:29	19:59:11	20:34:52	20:53:24	21:12:33	13:13:23	0.008	8.176	11
09/02/19	M*	4:34:05	4:53:15	5:11:47	5:47:30	6:17:14	7:25:50	12:52:52	18:20:36	19:27:42	19:57:20	20:32:53	20:51:20	21:08:23	13:10:28	0.328	7.812	19
09/03/19	Tu*	4:35:37	4:54:40	5:13:07	5:48:43	6:18:23	7:23:58	12:52:33	18:21:50	19:25:54	19:55:28	20:30:55	20:49:16	21:10:12	13:07:32	0.652	7.446	29
09/04/19	W*	4:37:08	4:56:05	5:14:27	5:49:55	6:19:31	7:22:05	12:52:13	18:23:04	19:24:06	19:53:37	20:28:56	20:47:12	21:06:02	13:04:35	0.981	7.078	39
09/05/19	Th*	4:38:39	4:57:30	5:15:47	5:51:08	6:20:40	7:20:12	12:51:53	18:24:17	19:22:18	19:51:44	20:26:57	20:45:08	21:03:52	13:01:38	1.315	6.708	50
09/06/19	F*	4:40:09	4:58:53	5:17:05	5:52:20	6:21:48	7:18:18	12:51:33	18:25:31	19:20:29	19:49:52	20:24:58	20:43:04	21:01:42	12:58:41</			

Date	DoW	Begin	Begin	Begin	Begin	Sun	Local	Sun	Sunset	End Civil	End Nautical	End 15-deg.	End	Length	Noon	Noon	9 PM
		Astro-nomical	15-deg.	Nautical	Civil								Astro-nomical		Eqn	sun declination	
		Twilight	Twilight	Twilight	Twilight	East	Noon	West	Sunrise	Twilight	Twilight	Twilight	Twilight	of Day	Time (min.)	(deg.)	(pct.)
09/30/19	M*	5:13:00	5:30:08	5:47:05	6:20:41		12:43:10		18:36:08	19:04:51	19:38:21	19:55:15	20:12:20	11:46:40	10.034	-2.901	8
10/01/19	Tu*	5:14:16	5:31:22	5:48:18	6:21:52		12:42:50		18:34:18	19:03:02	19:36:30	19:53:23	20:10:25	11:43:39	10.358	-3.289	16
10/02/19	W*	5:15:32	5:32:36	5:49:30	6:23:02		12:42:31		18:32:29	19:01:13	19:34:40	19:51:32	20:08:32	11:40:39	10.677	-3.676	24
10/03/19	Th*	5:16:47	5:33:49	5:50:42	6:24:13		12:42:12		18:30:40	18:59:24	19:32:51	19:49:41	20:06:39	11:37:38	10.991	-4.063	34
10/04/19	F*	5:18:03	5:35:03	5:51:54	6:25:24		12:41:54		18:28:51	18:57:37	19:31:02	19:47:51	20:04:48	11:34:38	11.299	-4.449	44
10/05/19	Sat*	5:19:18	5:36:16	5:53:06	6:26:36		12:41:36		18:27:03	18:55:50	19:29:14	19:46:02	20:02:57	11:31:38	11.602	-4.833	54
10/06/19	Sun*	5:20:32	5:37:29	5:54:18	6:27:47		12:41:18		18:25:16	18:54:03	19:27:27	19:44:14	20:01:08	11:28:39	11.899	-5.217	64
10/07/19	M*	5:21:46	5:38:41	5:55:30	6:28:58		12:41:00		18:23:29	18:52:17	19:25:41	19:42:27	19:59:19	11:25:39	12.190	-5.600	73
10/08/19	Tu*	5:23:00	5:39:54	5:56:41	6:30:09		12:40:43		18:21:42	18:50:32	19:23:56	19:40:41	19:57:31	11:22:40	12.474	-5.981	81
10/09/19	W*	5:24:14	5:41:06	5:57:53	6:31:21		12:40:27		18:19:56	18:48:48	19:22:12	19:38:56	19:55:45	11:19:41	12.752	-6.362	88
10/10/19	Th*	5:25:28	5:42:18	5:59:04	6:32:33		12:40:11		18:18:11	18:47:04	19:20:28	19:37:12	19:54:00	11:16:42	13.021	-6.740	93
10/11/19	F*	5:26:41	5:43:31	6:00:16	6:33:44		12:39:55		18:16:26	18:45:21	19:18:46	19:35:29	19:52:16	11:13:44	13.284	-7.118	97
10/12/19	Sat*	5:27:54	5:44:43	6:01:28	6:34:56		12:39:40		18:14:42	18:43:39	19:17:04	19:33:47	19:50:33	11:10:46	13.538	-7.493	99
10/13/19	Sun*	5:29:07	5:45:55	6:02:39	6:36:08		12:39:25		18:12:59	18:41:58	19:15:23	19:32:06	19:48:51	11:07:49	13.783	-7.867	100
10/14/19	M*	5:30:19	5:47:06	6:03:50	6:37:21		12:39:11		18:11:16	18:40:17	19:13:44	19:30:26	19:47:11	11:04:52	14.020	-8.239	98
10/15/19	Tu*	5:31:32	5:48:18	6:05:02	6:38:33		12:38:57		18:09:34	18:38:38	19:12:06	19:28:47	19:45:31	11:01:56	14.248	-8.609	95
10/16/19	W*	5:32:44	5:49:30	6:06:14	6:39:46		12:38:44		18:07:54	18:37:00	19:10:28	19:27:10	19:43:54	10:59:00	14.466	-8.977	90
10/17/19	Th*	5:33:56	5:50:41	6:07:25	6:40:59		12:38:31		18:06:14	18:35:22	19:08:52	19:25:34	19:42:17	10:56:04	14.675	-9.343	83
10/18/19	F*	5:35:08	5:51:53	6:08:37	6:42:12		12:38:19		18:04:34	18:33:46	19:07:17	19:23:59	19:40:42	10:53:09	14.873	-9.707	75
10/19/19	Sat*	5:36:20	5:53:05	6:09:48	6:43:25		12:38:08		18:02:56	18:32:10	19:05:44	19:22:26	19:39:08	10:50:15	15.061	-10.069	65
10/20/19	Sun*	5:37:32	5:54:16	6:11:00	6:44:38		12:37:58		18:01:19	18:30:36	19:04:11	19:20:53	19:37:35	10:47:21	15.238	-10.428	55
10/21/19	M*	5:38:44	5:55:28	6:12:12	6:45:52		12:37:48		17:59:43	18:29:03	19:02:40	19:19:23	19:36:04	10:44:29	15.403	-10.784	43
10/22/19	Tu*	5:39:55	5:56:39	6:13:24	6:47:06		12:37:38		17:58:07	18:27:31	19:01:10	19:17:53	19:34:35	10:41:36	15.558	-11.138	32
10/23/19	W*	5:41:07	5:57:51	6:14:36	6:48:20		12:37:30		17:56:33	18:26:00	18:59:42	19:16:25	19:33:07	10:38:45	15.701	-11.489	22
10/24/19	Th*	5:42:18	5:59:02	6:15:47	6:49:34		12:37:22		17:55:00	18:24:31	18:58:14	19:14:58	19:31:40	10:35:54	15.832	-11.838	13
10/25/19	F*	5:43:30	6:00:13	6:16:59	6:50:48		12:37:15		17:53:28	18:23:03	18:56:49	19:13:33	19:30:15	10:33:04	15.951	-12.183	6
10/26/19	Sat*	5:44:41	6:01:25	6:18:11	6:52:03		12:37:08		17:51:58	18:21:36	18:55:24	19:12:10	19:28:52	10:30:16	16.057	-12.525	2
10/27/19	Sun*	5:45:52	6:02:36	6:19:24	6:53:17		12:37:03		17:50:28	18:20:10	18:54:01	19:10:47	19:27:30	10:27:28	16.152	-12.864	0
10/28/19	M*	5:47:03	6:03:48	6:20:36	6:54:32		12:36:58		17:49:00	18:18:46	18:52:40	19:09:27	19:26:10	10:24:41	16.234	-13.200	1
10/29/19	Tu*	5:48:14	6:04:59	6:21:48	6:55:47		12:36:54		17:47:33	18:17:23	18:51:20	19:08:08	19:24:51	10:21:55	16.303	-13.532	5
10/30/19	W*	5:49:25	6:06:10	6:23:00	6:57:02		12:36:50		17:46:08	18:16:02	18:50:02	19:06:50	19:23:34	10:19:10	16.360	-13.861	11
10/31/19	Th*	5:50:36	6:07:21	6:24:12	6:58:17		12:36:48		17:44:44	18:14:42	18:48:45	19:05:34	19:22:19	10:16:27	16.404	-14.186	19
11/01/19	F*	5:51:46	6:08:33	6:25:24	6:59:33		12:36:46		17:43:21	18:13:23	18:47:30	19:04:20	19:21:05	10:13:44	16.434	-14.508	28
11/02/19	Sat*	5:52:56	6:09:44	6:26:36	7:00:48		12:36:45		17:41:59	18:12:06	18:46:16	19:03:08	19:19:53	10:11:03	16.452	-14.825	37
11/03/19	Sun	4:54:07	5:10:54	5:27:48	6:02:03		11:36:44		16:40:40	17:10:51	17:45:04	18:01:57	18:18:43	10:08:24	16.457	-15.138	48
11/04/19	M	4:55:17	5:12:05	5:29:00	6:03:19		11:36:45		16:39:21	17:09:37	17:43:54	18:00:48	18:17:35	10:05:46	16.448	-15.447	57
11/05/19	Tu	4:56:27	5:13:16	5:30:12	6:04:34		11:36:46		16:38:04	17:08:25	17:42:46	17:59:40	18:16:29	10:03:09	16.426	-15.752	66
11/06/19	W	4:57:36	5:14:26	5:31:23	6:05:49		11:36:48		16:36:49	17:07:14	17:41:39	17:58:35	18:15:24	10:00:34	16.390	-16.053	75
11/07/19	Th	4:58:46	5:15:37	5:32:35	6:07:04		11:36:51		16:35:36	17:06:06	17:40:34	17:57:31	18:14:21	9:58:00	16.340	-16.349	83
11/08/19	F	4:59:55	5:16:47	5:33:46	6:08:20		11:36:55		16:34:24	17:04:59	17:39:31	17:56:29	18:13:20	9:55:29	16.277	-16.640	89
11/09/19	Sat	5:01:04	5:17:57	5:34:58	6:09:35		11:37:00		16:33:14	17:03:53	17:38:29	17:55:29	18:12:21	9:52:59	16.200	-16.927	94
11/10/19	Sun	5:02:13	5:19:06	5:36:09	6:10:50		11:37:05		16:32:06	17:02:50	17:37:30	17:54:31	18:11:24	9:50:31	16.109	-17.209	98
11/11/19	M	5:03:21	5:20:16	5:37:19	6:12:04		11:37:12		16:30:59	17:01:48	17:36:32	17:53:35	18:10:29	9:48:05	16.004	-17.486	100
11/12/19	Tu	5:04:29	5:21:25	5:38:30	6:13:19		11:37:19		16:29:54	17:00:49	17:35:36	17:52:40	18:09:35	9:45:40	15.885	-17.758	100
11/13/19	W	5:05:37	5:22:34	5:39:40	6:14:33		11:37:27		16:28:52	16:59:51	17:34:43	17:51:48	18:08:44	9:43:18	15.751	-18.025	97
11/14/19	Th	5:06:45	5:23:43	5:40:51	6:15:47		11:37:36		16:27:51	16:58:55	17:33:51	17:50:58	18:07:55	9:40:58	15.603	-18.287	93
11/15/19	F	5:07:52	5:24:51	5:42:01	6:17:01		11:37:45		16:26:52	16:58:01	17:33:01	17:50:10	18:07:08	9:38:41	15.442	-18.543	87
11/16/19	Sat	5:08:59	5:25:59	5:43:10	6:18:15		11:37:56		16:25:55	16:57:09	17:32:13	17:49:23	18:06:23	9:36:25	15.265	-18.794	78
11/17/19	Sun	5:10:06	5:27:07	5:44:19	6:19:28		11:38:07		16:25:00	16:56:20	17:31:28	17:48:39	18:05:40	9:34:12	15.075	-19.040	69
11/18/19	M	5:11:12	5:28:15	5:45:28	6:20:41		11:38:20		16:24:08	16:55:32	17:30:44	17:47:57	18:04:59	9:32:02	14.870	-19.280	58
11/19/19	Tu	5:12:18	5:29:21	5:46:37	6:21:54		11:38:33		16:23:17	16:54:46	17:30:03	17:47:17	18:04:20	9:29:54	14.651	-19.514	47
11/20/19	W	5:13:23	5:30:28	5:47:45	6:23:06		11:38:47		16:22:29	16:54:03	17:29:23	17:46:39	18:03:43	9:27:49	14.419	-19.742	36
11/21/19	Th	5:14:28	5:31:34	5:48:52	6:24:17		11:39:02		16:21:43	16:53:22	17:28:46	17:46:03	18:03:09	9:25:46	14.172	-19.964	25
11/22/19	F	5:15:33	5:32:40	5:49:59	6:25:28		11:39:17		16:20:59	16:52:43	17:28:11	17:45:30	18:02:36	9:23:47	13.911	-20.180	16
11/23/19	Sat	5:16:36	5:33:45	5:51:06	6:26:38		11:39:34		16:20:17	16:52:06	17:27:38	17:44:58	18:02:06	9:21:50	13.638	-20.390	8
11/24/19	Sun	5:17:40	5:34:49	5:52:11	6:27:48		11:39:51		16:19:38	16:51:31	17:27:07	17:44:29	18:01:38	9:19:56	13.350	-20.594	3
11/25/19	M	5:18:42	5:35:53	5:53:17	6:28:57		11:40:09		16:19:01	16:50:59	17:26:39	17:44:02	18:01:12	9:18:05	13.050	-20.792	0
11/26/19	Tu	5:19:44	5:36:56	5:54:21	6:30:06		11:40:28		16:18:26	16:50:29	17:26:13	17:43:37	18:00:49	9:16:18	12.738	-20.983	0
11/27/19	W	5:20:46	5:37:58	5:55:25	6:31:13		11:40:47		16:17:54	16:50:01	17:25:49	17:43:15	18:00:27	9:14:34	12.413	-21.167	3
11/28/19	Th	5:21:46	5:39:00	5:56:28	6:32:20		11:41:07		16:17:24	16:49:36	17:25:27	17:42:					

HVO -103.297529, 44.108178, Time Zone = MST/MDT

Date	DoW	Begin Astro-nomical	Begin 15-deg.	Begin Nautical	Begin Civil	Sunrise	Sun East	Local Noon	Sun West	Sunset	End Civil	End Nautical	End 15-deg.	End Astro-nomical	Length of Day	Noon Eqn Time (min.)	Noon sun declination (deg.)	9 PM Lunar Illum. (pct.)
12/15/19	Sun	5:36:19	5:53:47	6:11:31	6:48:05	7:21:09		11:48:18		16:15:21	16:48:25	17:24:59	17:42:43	18:00:10	8:54:12	4.903	-23.276	82
12/16/19	M	5:36:59	5:54:27	6:12:11	6:48:47	7:21:52		11:48:47		16:15:37	16:48:42	17:25:17	17:43:02	18:00:29	8:53:45	4.419	-23.322	73
12/17/19	Tu	5:37:38	5:55:06	6:12:50	6:49:27	7:22:33		11:49:16		16:15:55	16:49:01	17:25:38	17:43:22	18:00:50	8:53:22	3.932	-23.360	62
12/18/19	W	5:38:14	5:55:43	6:13:28	6:50:05	7:23:12		11:49:45		16:16:16	16:49:23	17:26:00	17:43:45	18:01:13	8:53:04	3.441	-23.391	51
12/19/19	Th	5:38:50	5:56:18	6:14:03	6:50:41	7:23:49		11:50:15		16:16:39	16:49:47	17:26:25	17:44:10	18:01:38	8:52:51	2.948	-23.413	39
12/20/19	F	5:39:23	5:56:52	6:14:37	6:51:15	7:24:23		11:50:45		16:17:05	16:50:13	17:26:51	17:44:37	18:02:05	8:52:42	2.452	-23.428	28
12/21/19	Sat	5:39:55	5:57:24	6:15:09	6:51:48	7:24:56		11:51:15		16:17:33	16:50:41	17:27:20	17:45:05	18:02:34	8:52:38	1.954	-23.435	19
12/22/19	Sun	5:40:25	5:57:54	6:15:39	6:52:18	7:25:26		11:51:45		16:18:04	16:51:12	17:27:50	17:45:36	18:03:04	8:52:38	1.455	-23.435	11
12/23/19	M	5:40:54	5:58:22	6:16:08	6:52:46	7:25:54		11:52:15		16:18:37	16:51:45	17:28:23	17:46:08	18:03:37	8:52:43	0.956	-23.426	5
12/24/19	Tu	5:41:20	5:58:49	6:16:34	6:53:12	7:26:19		11:52:45		16:19:12	16:52:20	17:28:57	17:46:43	18:04:11	8:52:53	0.457	-23.409	1
12/25/19	W	5:41:45	5:59:13	6:16:58	6:53:36	7:26:42		11:53:14		16:19:50	16:52:57	17:29:34	17:47:19	18:04:47	8:53:08	-0.042	-23.385	0
12/26/19	Th	5:42:08	5:59:36	6:17:21	6:53:57	7:27:03		11:53:44		16:20:30	16:53:35	17:30:12	17:47:57	18:05:25	8:53:27	-0.539	-23.353	1
12/27/19	F	5:42:29	5:59:57	6:17:41	6:54:17	7:27:21		11:54:14		16:21:12	16:54:16	17:30:52	17:48:36	18:06:04	8:53:51	-1.034	-23.313	4
12/28/19	Sat	5:42:49	6:00:16	6:18:00	6:54:34	7:27:37		11:54:44		16:21:56	16:54:59	17:31:33	17:49:17	18:06:45	8:54:19	-1.526	-23.265	9
12/29/19	Sun	5:43:06	6:00:32	6:18:16	6:54:49	7:27:50		11:55:13		16:22:42	16:55:44	17:32:17	17:50:00	18:07:27	8:54:52	-2.015	-23.209	15
12/30/19	M	5:43:21	6:00:47	6:18:30	6:55:01	7:28:01		11:55:42		16:23:31	16:56:30	17:33:02	17:50:45	18:08:11	8:55:30	-2.500	-23.146	23
12/31/19	Tu	5:43:34	6:01:00	6:18:42	6:55:12	7:28:09		11:56:11		16:24:21	16:57:18	17:33:48	17:51:31	18:08:56	8:56:12	-2.981	-23.075	31

* Days when daylight time is in effect are marked with an asterisk.
 Program eqn_time3.py ver 160328a gglib version 160629a