2024 AstroCalendar for Seattle, WA

Denis G. Janky See explanatory notes at end of calendar.

January

Day	astronomical twilight begin	astronomical twilight end	moon rise	moon set	% Moon Illuminated at midnight		Beginning of One-Hour Period: Evening 6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	Next Morning 12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM
1	605	1821	2229	1113	75%		dark	dark	dark	dark	moon	moon	moon	moon	moon	moon	moon	moon
2	605	1821	2335	1127	67%		dark	dark	dark	dark	dark	dark	moon	moon	moon	moon	moon	moon
3	605	1822	0	1141	58%	Last Qrtr	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon	moon
4	605	1823	41	1155	48%		dark	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon
5	605	1824	149	1211	39%		dark	dark	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon
6	605	1825	301	1231	29%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	moon	moon
7	605	1826	416	1256	20%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
8	605	1827	534	1332	13%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
9	605	1828	648	1421	6%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
10	605	1829	754	1527	2%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
11	604	1830	845	1647	0%	New	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
12	604	1831	923	1814	1%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
13	604	1832	951	1942	5%		sun	moon	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
14	603	1834	1013	2107	11%		sun	moon	moon	dark	dark	dark	dark	dark	dark	dark	dark	dark
15	603	1835	1032	2229	20%		sun	moon	moon	moon	dark	dark	dark	dark	dark	dark	dark	dark
16	603	1836	1049	2349	30%		sun	moon	moon	moon	moon	moon	dark	dark	dark	dark	dark	dark
17	602	1837	1106	0	41%	First Qrtr	sun	moon	moon	moon	moon	moon	moon	dark	dark	dark	dark	dark
18	602	1838	1125	108	52%		sun	moon	moon	moon	moon	moon	moon	moon	dark	dark	dark	dark
19	601	1839	1148	227	63%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	dark	dark
20	600	1841	1216	345	73%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	dark
21	600	1842	1252	500	82%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
22	559	1843	1339	607	89%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
23	558	1844	1437	702	94%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
24	558	1846	1543	746	98%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
25	557	1847	1652	819	100%	Full	sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
26	556	1848	1802	844	100%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
27	555	1849	1911	903	98%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
28	554	1851	2017	919	94%		sun	dark	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
29	553	1852	2123	933	89%		sun	dark	dark	moon	moon	moon	moon	moon	moon	moon	moon	moon
30	552	1853	2228	947	82%		sun	dark	dark	dark	moon	moon	moon	moon	moon	moon	moon	moon
31	551	1855	2335	1000	74%		sun	dark	dark	dark	dark	dark	moon	moon	moon	moon	moon	moon

February

Day	astronomical twilight begin	astronomical twilight end	moon rise	moon set	% Moon Illuminated at midnight		Beginning of One-Hour Period: Evening 6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	Next Morning 12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM
1	550	1856	0	1015	66%		sun	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon	moon
2	549	1857	44	1032	56%	Last Qrtr	sun	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon
3	548	1859	156	1054	47%		sun	dark	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon
4	547	1900	310	1124	36%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	moon	moon
5	546	1902	425	1205	27%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
6	544	1903	534	1301	18%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
7	543	1904	632	1414	10%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
8	542	1906	716	1539	4%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
9	541	1907	749	1709	1%	New	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
10	539	1909	814	1838	0%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
11	538	1910	835	2005	3%		sun	moon	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
12	536	1911	853	2129	8%		sun	moon	moon	dark	dark	dark	dark	dark	dark	dark	dark	dark
13	535	1913	910	2252	16%		sun	moon	moon	moon	moon	dark	dark	dark	dark	dark	dark	dark
14	534	1914	929	0	26%		sun	moon	moon	moon	moon	moon	dark	dark	dark	dark	dark	dark
15	532	1916	951	14	36%		sun	moon	moon	moon	moon	moon	moon	moon	dark	dark	dark	dark
16	531	1917	1017	134	47%	First Qrtr	sun	moon	moon	moon	moon	moon	moon	moon	moon	dark	dark	sun
17	529	1918	1051	251	58%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	dark	sun
18	527	1920	1135	401	68%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
19	526	1921	1229	500	77%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
20	524	1923	1333	547	84%		sun	moon	moon	moon	moon	moon	moon	moon	moon		moon	sun
21	522	1924	1441	622	91%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
22	521	1926	1551	649	96%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
23	519	1927	1700	709	99%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
24	517	1929	1807	726	100%	Full	sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
25	516	1930	1913	741	99%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
26	514	1932	2019	754	97%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
27	512	1933	2125	807	93%		sun	sun	dark	moon	moon	moon	moon	moon	moon	moon	moon	sun
28	510	1935	2232	821	88%		sun	sun	dark	dark	dark	moon	moon	moon	moon	moon	moon	sun
29	508	1936	2342	837	81%		sun	sun	dark	dark	dark	dark	moon	moon	moon	moon	moon	sun

March

Day	astronomical twilight begin	astronomical twilight end	moon rise	moon set	% Moon Illuminated at midnight		Beginning of One-Hour Period (Note: DST begins on March 10) 6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM
						DST>>	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM
1	506	1938	0	857	73%		sun	sun	dark	dark	dark	dark	dark	moon	moon	moon	moon	sun
2	504	1939	55	922	63%		sun	sun	dark	dark	dark	dark	dark	dark	moon	moon	moon	sun
3	502	1941	208	957	53%	Last Qrtr	sun	sun	dark	dark	dark	dark	dark	dark	dark	moon	moon	sun
4	501	1942	318	1044	43%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	moon	sun
5	459	1944	419	1148	32%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
6	457	1945	508	1305	22%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
7	455	1947	545	1432	13%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
8	453	1948	613	1601	6%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
9	450	1950	636	1730	2%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
10	448	1951	655	1857	0%	New	sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
11	446	1953	713	2023	1%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
12	444	1955	731	2149	6%		sun	sun	moon	moon	dark	dark	dark	dark	dark	dark	dark	sun
13	442	1956	752	2313	13%		sun	sun	moon	moon	moon	dark	dark	dark	dark	dark	dark	sun
14	440	1958	817	0	21%		sun	sun	moon	moon	moon	moon	moon	dark	dark	dark	dark	sun
15	438	1959	849	35	31%		sun	sun	moon	moon	moon	moon	moon	moon	dark	dark	dark	sun
16	436	2001	930	151	41%	First Qrtr	sun	sun	moon	moon	moon	moon	moon	moon	moon	dark	dark	sun
17	433	2003	1022	256	52%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	dark	sun
18	431	2004	1123	347	62%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
19	429	2006	1231	425	71%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
20	427	2008	1341	454	79%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
21	424	2009	1450	516	87%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
22	422	2011	1558	534	92%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
23	420	2013	1704	549	97%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
24	418	2014	1810	602	99%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
25	415	2016	1916	615	100%	Full	sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
26	413	2018	2023	629	99%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
27	411	2020	2133	644	96%		sun	sun	dark	dark	moon	moon	moon	moon	moon	moon	sun	sun
28	408	2021	2245	702	92%		sun	sun	dark	dark	dark	moon	moon	moon	moon	moon	sun	sun
29	406	2023	2358	725	86%		sun	sun	dark	dark	dark	dark	moon	moon	moon	moon	sun	sun
30	404	2025	0	756	78%		sun	sun	dark	dark	dark	dark	dark	moon	moon	moon	sun	sun
31	401	2027	108	838	69%		sun	sun	dark	dark	dark	dark	dark	dark	moon	moon	sun	sun

April

Day	astronomical twilight begin	astronomical twilight end	moon rise	moon set	% Moon Illuminated at midnight		Beginning of One-Hour Period Evening 6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	Next Morning 12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM
						DST>>	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM
1	359	2029	211	934	59%	Last Qrtr	sun	sun	dark	dark	dark	dark	dark	dark	dark	moon	sun	sun
2	356	2030	303	1044	48%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	sun	sun
3	354	2032	343	1205	37%		sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
4	352	2034	413	1330	26%		sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
5	349	2036	437	1457	17%		sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
6	347	2038	457	1623	9%		sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
7	344	2040	515	1748	3%		sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
8	342	2042	533	1915	0%	New	sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
9	339	2044	552	2042	0%		sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
10	337	2046	615	2208	4%		sun	sun	sun	moon	dark	dark	dark	dark	dark	dark	sun	sun
11	334	2048	644	2330	9%		sun	sun	sun	moon	moon	dark	dark	dark	dark	dark	sun	sun
12	332	2050	722	0	17%		sun	sun	sun	moon	moon	moon	moon	dark	dark	sun	sun	sun
13	329	2052	811	42	26%		sun	sun	sun	moon	moon	moon	moon	moon	dark	sun	sun	sun
14	327	2054	911	141	35%		sun	sun	sun	moon	moon	moon	moon	moon	dark	sun	sun	sun
15	324	2056	1018	225	45%	First Qrtr	sun	sun	sun	moon	moon	moon	moon	moon	moon	sun	sun	sun
16	322	2058	1129	257	55%		sun	sun	sun	moon	moon	moon	moon	moon	moon	sun	sun	sun
17	319	2100	1239	322	65%		sun	sun	sun	moon	moon	moon	moon	moon	moon	sun	sun	sun
18	317	2102	1347	341	74%		sun	sun	sun	moon	moon	moon	moon	moon	moon	sun	sun	sun
19	314	2104	1454	356	82%		sun	sun	sun	moon	moon	moon	moon	moon	moon	sun	sun	sun
20	311	2106	1559	410	88%		sun	sun	sun	moon	moon	moon	moon	moon	moon	sun	sun	sun
21	309	2109	1705	423	94%		sun	sun	sun	moon	moon	moon	moon	moon	moon	sun	sun	sun
22	306	2111	1812	436	97%		sun	sun	sun	moon	moon	moon	moon	moon	moon	sun	sun	sun
23	304	2113	1922	451	100%	Full	sun	sun	sun	moon	moon	moon	moon	moon	moon	sun	sun	sun
24	301	2115	2034	508	100%		sun	sun	sun	moon	moon	moon	moon	moon	moon	sun	sun	sun
25	259	2117	2147	530	98%		sun	sun	sun	dark	moon	moon	moon	moon	moon	sun	sun	sun
26	256	2120	2259	558	95%		sun	sun	sun	dark	dark	moon	moon	moon	moon	sun	sun	sun
27	253	2122	0	637	89%		sun	sun	sun	dark	dark	dark	moon	moon	moon	sun	sun	sun
28	251	2124	5	728	82%		sun	sun	sun	dark	dark	dark	dark	moon	moon	sun	sun	sun
29	248	2127	100	834	73%		sun	sun	sun	dark	dark	dark	dark	dark	moon	sun	sun	sun
30	246	2129	143	950	63%		sun	sun	sun	dark	dark	dark	dark	dark	moon	sun	sun	sun

May

Day	astronomical twilight begin	astronomical twilight end	moon rise	moon set	% Moon Illuminated at midnight		Beginning of One-Hour Period: Evening 6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	Next Morning 12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM
						DST>>	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM
1	243	2132	215	1112	52%	Last Qtr	sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun
2	241	2134	240	1235	40%		sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun
3	238	2136	301	1358	29%		sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun
4	235	2139	319	1521	19%		sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun
5	233	2141	336	1644	11%		sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun
6	230	2144	354	1809	5%		sun	sun	sun	sun	dark	dark	dark	dark	sun	sun	sun	sun
7	228	2146	415	1936	1%	New	sun	sun	sun	sun	dark	dark	dark	dark	sun	sun	sun	sun
8	225	2149	441	2101	0%		sun	sun	sun	sun	dark	dark	dark	dark	sun	sun	sun	sun
9	222	2151	514	2220	2%		sun	sun	sun	sun	dark	dark	dark	dark	sun	sun	sun	sun
10	220	2154	558	2327	6%		sun	sun	sun	sun	moon	dark	dark	dark	sun	sun	sun	sun
11	217	2156	655	0	13%		sun	sun	sun	sun	moon	moon	dark	dark	sun	sun	sun	sun
12	215	2159	801	18	21%		sun	sun	sun	sun	moon	moon	moon	dark	sun	sun	sun	sun
13	212	2201	912	56	30%		sun	sun	sun	sun	moon	moon	moon	dark	sun	sun	sun	sun
14	209	2204	1024	124	39%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
15	207	2207	1134	145	49%	First Qtr	sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
16	204	2209	1242	202	58%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
17	202	2212	1347	217	67%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
18	159	2214	1453	230	76%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
19	157	2217	1559	243	83%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
20	154	2220	1708	257	90%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
21	152	2222	1819	314	95%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
22	150	2225	1933	334	98%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
23	147	2227	2047	400	100%	Full	sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
24	145	2230	2157	435	99%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
25	142	2233	2256	523	96%		sun	sun	sun	sun	sun	moon	moon	moon	sun	sun	sun	sun
26	140	2235	2343	625	92%		sun	sun	sun	sun	sun	dark	moon	moon	sun	sun	sun	sun
27	138	2238	0	740	85%		sun	sun	sun	sun	sun	dark	moon	moon	sun	sun	sun	sun
28	135	2240	18	900	76%		sun	sun	sun	sun	sun	dark	dark	moon	sun	sun	sun	sun
29	133	2243	45	1023	66%		sun	sun	sun	sun	sun	dark	dark	moon	sun	sun	sun	sun
30	131	2245	106	1144	55%	Last Qtr	sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
31	128	2248	124	1305	43%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun

June

Day	astronomical twilight begin	astronomical twilight end	moon rise	moon set	% Moon Illuminated at midnight		Beginning of One-Hour Period: Evening 6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	Next Morning 12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM
						DST>>	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM
1	126	2250	141	1425	32%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
2	124	2253	158	1547	22%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
3	122	2255	217	1710	13%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
4	120	2257	240	1835	6%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
5	118	2300	309	1956	2%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
6	116	2302	348	2108	0%	New	sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
7	114	2304	440	2207	1%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
8	113	2306	543	2251	4%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
9	111	2308	653	2324	9%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
10	110	2310	806	2348	16%		sun	sun	sun	sun	sun	moon	dark	sun	sun	sun	sun	sun
11	108	2311	918	0	24%		sun	sun	sun	sun	sun	moon	dark	sun	sun	sun	sun	sun
12	107	2313	1027	7	33%		sun	sun	sun	sun	sun	moon	dark	sun	sun	sun	sun	sun
13	106	2314	1134	22	42%	First Qtr	sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
14	105	2316	1239	36	51%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
15	104	2317	1345	49	61%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
16	103	2318	1452	103	70%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
17	103	2319	1602	118	78%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
18	103	2319	1715	136	86%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
19	102	2320	1829	200	92%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
20	102	2320	1942	231	97%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
21	103	2320	2047	315	99%	Full	sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
22	103	2320	2139	413	100%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
23	104	2319	2219	525	98%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
24	104	2319	2248	646	93%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
25	105	2318	2311	810	87%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
26	106	2317	2330	933	78%		sun	sun	sun	sun	sun	dark	moon	sun	sun	sun	sun	sun
27	108	2316	2347	1054	68%		sun	sun	sun	sun	sun	dark	moon	sun	sun	sun	sun	sun
28	109	2315	0	1214	57%	Last Qtr	sun	sun	sun	sun	sun	dark	moon	sun	sun	sun	sun	sun
29	111	2314	4	1334	45%		sun	sun	sun	sun	sun	dark	moon	sun	sun	sun	sun	sun
30	112	2313	22	1455	34%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun

July

Day	astronomical twilight begin	astronomical twilight end	moon rise	moon set	% Moon Illuminated at midnight		Beginning of One-Hour Period: Evening 6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	Next Morning 12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM
						DST>>	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	
1	114	2311	43	1617	24%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun	
2	116	2309	109	1738	15%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun	
3	118	2308	144	1853	8%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun	
4	120	2306	229	1957	3%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun	
5	122	2304	327	2046	1%	New	sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun	
6	124	2302	435	2123	0%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun	
7	127	2300	548	2150	2%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun	
8	129	2258	701	2210	6%		sun	sun	sun	sun	sun	dark	dark	dark	sun	sun	sun	sun	
9	131	2256	812	2227	12%		sun	sun	sun	sun	sun	dark	dark	dark	sun	sun	sun	sun	
10	134	2254	920	2241	18%		sun	sun	sun	sun	sun	dark	dark	dark	sun	sun	sun	sun	
11	136	2252	1026	2254	26%		sun	sun	sun	sun	sun	dark	dark	dark	sun	sun	sun	sun	
12	139	2249	1131	2308	35%		sun	sun	sun	sun	sun	dark	dark	dark	sun	sun	sun	sun	
13	141	2247	1237	2322	44%	First Qrtr	sun	sun	sun	sun	sun	dark	dark	dark	sun	sun	sun	sun	
14	144	2245	1345	2339	54%		sun	sun	sun	sun	sun	moon	dark	dark	sun	sun	sun	sun	
15	146	2242	1456	0	63%		sun	sun	sun	sun	sun	moon	dark	dark	sun	sun	sun	sun	
16	149	2240	1609	0	72%		sun	sun	sun	sun	sun	moon	dark	dark	sun	sun	sun	sun	
17	151	2238	1722	27	81%		sun	sun	sun	sun	sun	moon	moon	dark	sun	sun	sun	sun	
18	154	2235	1831	105	88%		sun	sun	sun	sun	sun	moon	moon	moon	sun	sun	sun	sun	
19	157	2233	1929	156	94%		sun	sun	sun	sun	sun	moon	moon	moon	sun	sun	sun	sun	
20	159	2230	2015	304	98%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun	
21	202	2228	2049	423	100%	Full	sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun	
22	204	2225	2114	549	99%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun	
23	207	2223	2135	715	95%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun	
24	209	2220	2153	839	89%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun	
25	212	2218	2210	1001	80%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun	
26	214	2215	2228	1123	70%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun	
27	217	2213	2247	1244	59%	Last Qrtr	sun	sun	sun	sun	dark	moon	moon	moon	sun	sun	sun	sun	
28	219	2210	2312	1406	48%		sun	sun	sun	sun	dark	moon	moon	moon	sun	sun	sun	sun	
29	222	2207	2343	1527	37%		sun	sun	sun	sun	dark	dark	moon	moon	sun	sun	sun	sun	
30	225	2205	0	1643	26%		sun	sun	sun	sun	dark	dark	moon	moon	sun	sun	sun	sun	
31	227	2202	24	1750	18%		sun	sun	sun	sun	dark	dark	dark	moon	moon	sun	sun	sun	

August

Day	astronomical twilight begin	astronomical twilight end	moon rise	moon set	% Moon Illuminated at midnight		Beginning of One-Hour Period: Evening 6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	Next Morning 12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM
						DST>>	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	
1	230	2200	117	1843	10%		sun	sun	sun	sun	dark	dark	dark	dark	moon	sun	sun	sun	
2	232	2157	222	1923	5%		sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun	
3	234	2155	333	1952	1%		sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun	
4	237	2152	446	2015	0%	New	sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun	
5	239	2149	557	2032	1%		sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun	
6	242	2147	707	2047	3%		sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun	
7	244	2144	813	2101	8%		sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun	
8	246	2142	919	2114	13%		sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun	
9	249	2139	1024	2127	21%		sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun	
10	251	2136	1131	2143	29%		sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun	
11	253	2134	1240	2201	38%		sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun	
12	256	2131	1351	2225	47%	First Qrtr	sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun	
13	258	2128	1503	2257	57%		sun	sun	sun	moon	moon	dark	dark	dark	dark	sun	sun	sun	
14	300	2126	1613	2341	67%		sun	sun	sun	moon	moon	moon	dark	dark	dark	sun	sun	sun	
15	302	2123	1716	0	76%		sun	sun	sun	moon	moon	moon	moon	dark	dark	sun	sun	sun	
16	304	2121	1807	40	85%		sun	sun	sun	moon	moon	moon	moon	moon	dark	sun	sun	sun	
17	307	2118	1845	154	92%		sun	sun	sun	moon	moon	moon	moon	moon	moon	sun	sun	sun	
18	309	2115	1915	318	97%		sun	sun	sun	moon	moon	moon	moon	moon	moon	moon	sun	sun	
19	311	2113	1938	446	100%	Full	sun	sun	sun	moon	moon	moon	moon	moon	moon	moon	sun	sun	
20	313	2110	1957	613	99%		sun	sun	sun	moon	moon	moon	moon	moon	moon	moon	sun	sun	
21	315	2108	2015	739	96%		sun	sun	sun	moon	moon	moon	moon	moon	moon	moon	sun	sun	
22	317	2105	2032	904	91%		sun	sun	sun	moon	moon	moon	moon	moon	moon	moon	sun	sun	
23	319	2103	2052	1028	82%		sun	sun	sun	moon	moon	moon	moon	moon	moon	moon	sun	sun	
24	321	2100	2115	1152	73%		sun	sun	sun	moon	moon	moon	moon	moon	moon	moon	sun	sun	
25	323	2057	2144	1316	62%		sun	sun	sun	dark	moon	moon	moon	moon	moon	moon	sun	sun	
26	325	2055	2222	1435	51%	Last Qrtr	sun	sun	sun	dark	moon	moon	moon	moon	moon	sun	sun	sun	
27	327	2052	2312	1545	40%		sun	sun	sun	dark	dark	moon	moon	moon	moon	sun	sun	sun	
28	329	2050	0	1642	30%		sun	sun	sun	dark	dark	dark	moon	moon	moon	moon	sun	sun	
29	331	2047	13	1725	21%		sun	sun	sun	dark	dark	dark	dark	moon	moon	moon	sun	sun	
30	333	2045	122	1757	13%		sun	sun	sun	dark	dark	dark	dark	dark	dark	moon	sun	sun	
31	335	2042	234	1820	7%		sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun	

September

Day	astronomical twilight begin	astronomical twilight end	moon rise	moon set	% Moon Illuminated at midnight		DST>> 7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM
							Beginning of One-Hour Period: Evening					Next Morning						
							6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM
1	337	2040	346	1839	3%		sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
2	339	2037	455	1855	1%	New	sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
3	341	2035	603	1908	0%		sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
4	342	2032	709	1921	1%		sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
5	344	2030	814	1934	5%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	sun	sun
6	346	2027	920	1949	9%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	sun	sun
7	348	2025	1028	2005	15%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	sun	sun
8	349	2022	1137	2027	23%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	sun	sun
9	351	2020	1249	2054	31%		sun	sun	moon	dark	dark	dark	dark	dark	dark	dark	sun	sun
10	353	2018	1358	2132	41%	First Qrtr	sun	sun	moon	moon	dark	dark	dark	dark	dark	dark	sun	sun
11	355	2015	1503	2223	51%		sun	sun	moon	moon	dark	dark	dark	dark	dark	dark	sun	sun
12	356	2013	1557	2329	61%		sun	sun	moon	moon	moon	dark	dark	dark	dark	dark	sun	sun
13	358	2010	1640	0	71%		sun	sun	moon	moon	moon	moon	moon	dark	dark	dark	sun	sun
14	400	2008	1713	47	81%		sun	sun	moon	moon	moon	moon	moon	moon	dark	dark	sun	sun
15	401	2006	1738	212	89%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
16	403	2003	1759	339	95%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
17	405	2001	1817	506	99%	Full	sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
18	406	1959	1835	633	100%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
19	408	1956	1854	800	98%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
20	409	1954	1916	928	93%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
21	411	1952	1943	1055	85%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
22	413	1950	2019	1219	76%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
23	414	1947	2106	1335	66%		sun	sun	dark	moon	moon	moon	moon	moon	moon	moon	sun	sun
24	416	1945	2204	1438	55%	Last Qrtr	sun	sun	dark	dark	moon	moon	moon	moon	moon	moon	sun	sun
25	417	1943	2312	1526	44%		sun	sun	dark	dark	dark	moon	moon	moon	moon	moon	sun	sun
26	419	1941	0	1601	34%		sun	sun	dark	dark	dark	dark	moon	moon	moon	moon	sun	sun
27	420	1938	24	1627	25%		sun	sun	dark	dark	dark	dark	dark	dark	moon	moon	sun	sun
28	422	1936	136	1646	17%		sun	sun	dark	dark	dark	dark	dark	dark	dark	moon	sun	sun
29	423	1934	246	1702	10%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	sun	sun
30	425	1932	353	1716	5%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	sun	sun

October

Day	astronomical twilight begin	astronomical twilight end	moon rise	moon set	% Moon Illuminated at midnight		DST>> 7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM
							Beginning of One-Hour Period: Evening					Next Morning						
							6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM
1	426	1930	459	1729	2%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun	sun
2	428	1928	605	1742	0%	New	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun	sun
3	429	1926	711	1756	0%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
4	431	1924	818	1812	2%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
5	432	1922	927	1832	6%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
6	434	1920	1038	1857	11%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
7	435	1918	1148	1930	18%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
8	437	1916	1253	2015	26%		sun	moon	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
9	438	1914	1350	2114	35%		sun	moon	moon	dark	dark	dark	dark	dark	dark	dark	dark	sun
10	440	1912	1436	2225	45%	First Qrtr	sun	moon	moon	moon	dark	dark	dark	dark	dark	dark	dark	sun
11	441	1910	1512	2345	56%		sun	moon	moon	moon	moon	moon	dark	dark	dark	dark	dark	sun
12	442	1908	1539	0	67%		sun	moon	moon	moon	moon	moon	moon	dark	dark	dark	dark	sun
13	444	1906	1601	108	77%		sun	moon	moon	moon	moon	moon	moon	moon	moon	dark	dark	sun
14	445	1904	1620	233	86%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	dark	sun
15	447	1902	1637	358	93%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
16	448	1900	1655	525	98%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
17	449	1859	1716	652	100%	Full	sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
18	451	1857	1741	822	99%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
19	452	1855	1813	951	95%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
20	454	1853	1856	1115	88%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
21	455	1852	1952	1226	80%		sun	dark	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
22	456	1850	2059	1321	71%		sun	dark	dark	moon	moon	moon	moon	moon	moon	moon	moon	sun
23	458	1849	2211	1402	60%		sun	dark	dark	dark	moon	moon	moon	moon	moon	moon	moon	sun
24	459	1847	2324	1431	50%	Last Qrtr	sun	dark	dark	dark	dark	moon	moon	moon	moon	moon	moon	sun
25	500	1845	0	1453	40%		sun	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon	sun
26	502	1844	36	1510	31%		sun	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon	sun
27	503	1842	144	1524	22%		sun	dark	dark	dark	dark	dark	dark	dark	dark	moon	moon	sun
28	504	1841	250	1538	15%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	moon	sun
29	506	1839	356	1550	9%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
30	507	1838	501	1604	4%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
31	509	1837	608	1619	1%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun

November

Beginning of One-Hour Period (Note: DST ends on November 3)

Day	astronomical twilight begin	astronomical twilight end	moon rise	moon set	% Moon Illuminated at midnight		Evening 6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	Next Morning 12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM
						DST>>	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM
1	510	1835	717	1638	0%	New	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
2	511	1834	828	1701	1%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
3	513	1833	938	1732	3%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
4	514	1831	1046	1813	7%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
5	515	1830	1146	1908	14%		moon	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
6	516	1829	1234	2014	21%		moon	moon	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
7	518	1828	1312	2130	30%		moon	moon	moon	dark	dark	dark	dark	dark	dark	dark	dark	sun
8	519	1826	1341	2249	40%	First Qrtr	moon	moon	moon	moon	moon	dark	dark	dark	dark	dark	dark	sun
9	520	1825	1404	0	51%		moon	moon	moon	moon	moon	moon	dark	dark	dark	dark	dark	sun
10	522	1824	1423	10	62%		moon	moon	moon	moon	moon	moon	moon	moon	dark	dark	dark	sun
11	523	1823	1440	132	73%		moon	moon	moon	moon	moon	moon	moon	moon	moon	dark	dark	sun
12	524	1822	1457	254	83%		moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	dark	sun
13	525	1821	1516	418	91%		moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
14	527	1820	1538	546	96%		moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
15	528	1819	1607	715	99%	Full	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
16	529	1819	1645	843	100%		moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
17	530	1818	1735	1003	97%		moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
18	532	1817	1839	1108	92%		dark	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
19	533	1816	1952	1156	85%		dark	dark	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
20	534	1816	2108	1231	76%		dark	dark	dark	moon	moon	moon	moon	moon	moon	moon	moon	moon
21	535	1815	2221	1256	67%		dark	dark	dark	dark	moon	moon	moon	moon	moon	moon	moon	moon
22	536	1814	2332	1315	57%	Last Qrtr	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon	moon	moon
23	538	1814	0	1331	47%		dark	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon	moon
24	539	1813	39	1344	38%		dark	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon
25	540	1813	145	1357	29%		dark	dark	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon
26	541	1812	250	1411	21%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	moon	moon
27	542	1812	356	1425	14%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	moon
28	543	1811	505	1443	8%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
29	544	1811	615	1505	4%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
30	545	1811	726	1533	1%	New	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark

December

Beginning of One-Hour Period

Day	astronomical twilight begin	astronomical twilight end	moon rise	moon set	% Moon Illuminated at midnight		Evening 6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	Next Morning 12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM
1	546	1811	836	1612	0%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
2	547	1810	939	1703	1%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
3	548	1810	1032	1806	5%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
4	549	1810	1113	1920	10%		moon	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
5	550	1810	1144	2039	17%		moon	moon	moon	dark	dark	dark	dark	dark	dark	dark	dark	dark
6	551	1810	1208	2158	26%		moon	moon	moon	moon	dark	dark	dark	dark	dark	dark	dark	dark
7	552	1810	1228	2318	36%		moon	moon	moon	moon	moon	dark	dark	dark	dark	dark	dark	dark
8	553	1810	1245	0	47%	First Qrtr	moon	moon	moon	moon	moon	moon	moon	dark	dark	dark	dark	dark
9	554	1810	1302	37	58%		moon	moon	moon	moon	moon	moon	moon	moon	dark	dark	dark	dark
10	555	1810	1319	157	69%		moon	moon	moon	moon	moon	moon	moon	moon	moon	dark	dark	dark
11	556	1810	1339	319	79%		moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	dark
12	556	1810	1403	445	88%		moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
13	557	1810	1436	612	94%		moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
14	558	1811	1520	735	98%		moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
15	559	1811	1618	847	100%	Full	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
16	559	1811	1728	944	99%		moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
17	600	1812	1844	1026	95%		dark	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
18	600	1812	2001	1055	89%		dark	dark	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
19	601	1813	2115	1117	82%		dark	dark	dark	moon	moon	moon	moon	moon	moon	moon	moon	moon
20	602	1813	2225	1135	74%		dark	dark	dark	dark	moon	moon	moon	moon	moon	moon	moon	moon
21	602	1814	2332	1150	65%		dark	dark	dark	dark	dark	dark	moon	moon	moon	moon	moon	moon
22	603	1814	0	1203	56%	Last Qrtr	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon	moon
23	603	1815	37	1216	46%		dark	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon
24	603	1815	143	1230	37%		dark	dark	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon
25	604	1816	250	1247	28%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	moon	moon
26	604	1817	359	1306	20%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	moon
27	604	1817	510	1332	13%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
28	605	1818	621	1407	7%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
29	605	1819	728	1454	3%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
30	605	1820	825	1554	1%	New	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
31	605	1820	911	1706	0%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
1	605	1821	709	1513														

About This Calendar

This calendar was created using data from U.S. Naval Observatory and Griffith Observatory.
The Twilight and Moon Rise/Set times are given in military time (e.g., 2148 is 9:48 PM) for Pacific Standard Time.
If Daylight Savings Time is in effect, these times are one hour behind local time.

The left side of the calendar gives the times of beginning and end of astronomical twilight, the moon rise and set times,
percent illumination of the moon at 12:00 AM, and the four primary moon phases (for Pacific time).
Shading of specific dates provide a quick means of finding the best nights for deep sky observing.
Also note that moon rise (or set) time is given as "0" when the moon does not rise (or set) on that day (under Pacific Standard Time).

Darkest blue shading is applied to New Moon dates.
Dark blue shaded dates are the best nights for deep sky observing.
Light blue shaded dates are "marginal" deep sky observing nights.

In determining which dates to shade, I gave preference to dates for which moonless conditions occurred shortly after the end of astronomical twilight.
Also, I took into account the moon's level of illumination. This process was not automated, and so my judgements may not always agree with yours.

The right side of the calendar gives more detail on exactly when there will be moonless conditions. The cell labels and shading were automated.
The column headings refer to the beginning of an hourly interval; for example, 6 PM refers to the hour beginning at 6 PM and ending at 7 PM.
Three entries are possible for each cell under these hourly headings, as described below.

sun	Astronomical twilight has not yet ended, or has begun (for the following morning). In some cases, the sun may even be above the horizon.
moon	The moon is above the horizon.
dark	Full astronomical darkness is in effect and the moon is below the horizon

Note that for a given hourly interval, a cell will be labeled "dark" if there is at least 30 minutes of full, moonless darkness during that hour.

The cell labels are a convenience to allow the user to quickly see when best conditions for observing will occur. The details can be discerned from the actual data.

Denis Janky