2016 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 12:00 AM		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	0	1143	59%	Last Qrtr	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon	moon	moon
2	605	1821	29	1209	49%		dark	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon	moon
3	605	1822	129	1235	40%		dark	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon
4	605	1823	229	1305	31%		dark	dark	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon
5	605	1824	329	1338	22%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	moon	moon
6	605	1825	429	1415	15%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	moon
7	605	1826	528	1500	8%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
8	605	1827	624	1551	4%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
9	605	1828	716	1650	1%	New	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
10	605	1829	803	1755	0%		dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
11	605	1830	844	1904	2%		moon	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
12	604	1831	921	2016	6%		sun	moon	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
13	604	1832	955	2129	13%		sun	moon	moon	dark	dark	dark	dark	dark	dark	dark	dark	dark
14	604	1834	1027	2242	22%		sun	moon	moon	moon	moon	dark	dark	dark	dark	dark	dark	dark
15	603	1835	1058	2355	32%		sun	moon	moon	moon	moon	moon	dark	dark	dark	dark	dark	dark
16	603	1836	1130	0	43%	First Qrtr	sun	moon	moon	moon	moon	moon	moon	dark	dark	dark	dark	dark
17	602	1837	1204	108	54%		sun	moon	moon	moon	moon	moon	moon	moon	dark	dark	dark	dark
18	602	1838	1241	219	65%		sun	moon	moon	moon	moon	moon	moon	moon	moon	dark	dark	dark
19	601	1839	1323	328	75%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	dark
20	600	1841	1411	433	84%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
21	600	1842	1505	533	91%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
22	559	1843	1603	625	96%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
23	558	1844	1705	710	99%	Full	sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
24	558	1846	1808	749	100%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
25	557	1847	1912	823	98%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
26	556	1848	2014	853	95%		sun	dark	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
27	555	1849	2115	920	90%		sun	dark	dark	moon	moon	moon	moon	moon	moon	moon	moon	moon
28	554	1851	2216	946	83%		sun	dark	dark	dark	moon	moon	moon	moon	moon	moon	moon	moon
29	553	1852	2315	1012	75%		sun	dark	dark	dark	dark	moon	moon	moon	moon	moon	moon	moon
30	552	1853	0	1038	67%		sun	dark	dark	dark	dark	dark	moon	moon	moon	moon	moon	moon
31	551	1855	15	1105	58%	Last Qrtr	sun	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon	moon

February

Day	astronomical twilight begin	astronomical twilight end	moon rise	moon set	% Moon Illuminated at 12:00 AM		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	114	1136	48%		sun	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon
2	549	1857	214	1211	39%		sun	dark	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon
3	548	1859	312	1251	30%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	moon	moon
4	547	1900	409	1339	21%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	moon
5	546	1902	503	1433	13%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
6	545	1903	552	1535	7%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
7	543	1904	637	1644	2%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
8	542	1906	717	1756	0%	New	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
9	541	1907	754	1911	1%		sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
10	539	1909	828	2027	4%		sun	moon	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
11	538	1910	900	2142	10%		sun	moon	moon	moon	dark	dark	dark	dark	dark	dark	dark	dark
12	537	1911	933	2257	18%		sun	moon	moon	moon	moon	dark	dark	dark	dark	dark	dark	dark
13	535	1913	1006	0	28%		sun	moon	moon	moon	moon	moon	dark	dark	dark	dark	dark	dark
14	534	1914	1043	10	39%	First Qrtr	sun	moon	moon	moon	moon	moon	moon	dark	dark	dark	dark	dark
15	532	1916	1124	120	50%		sun	moon	moon	moon	moon	moon	moon	moon	dark	dark	dark	dark
16	531	1917	1209	226	61%		sun	moon	moon	moon	moon	moon	moon	moon	moon	dark	dark	sun
17	529	1918	1300	326	72%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	dark	sun
18	527	1920	1356	420	81%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
19	526	1921	1455	507	88%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
20	524	1923	1557	548	94%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
21	523	1924	1659	623	98%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
22	521	1926	1802	654	100%	Full	sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
23	519	1927	1903	722	100%		sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
24	517	1929	2004	749	98%		sun	dark	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
25	516	1930	2104	814	94%		sun	dark	dark	moon	moon	moon	moon	moon	moon	moon	moon	sun
26	514	1932	2204	840	89%		sun	sun	dark	dark	moon	moon	moon	moon	moon	moon	moon	sun
27	512	1933	2303	907	82%		sun	sun	dark	dark	dark	moon	moon	moon	moon	moon	moon	sun
28	510	1935	0	937	74%		sun	sun	dark	dark	dark	dark	moon	moon	moon	moon	moon	sun
29	508	1936	2	1009	66%		sun	sun	dark	dark	dark	dark	dark	moon	moon	moon	moon	sun

March

Day	astronomical twilight begin	astronomical twilight end	moon rise	moon set	% Moon Illuminated at 12:00 AM		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	506	1938	100	1046	56%	Last Qrtr	sun	sun	dark	dark	dark	dark	dark	dark	moon	moon	moon	sun
2	505	1939	156	1129	47%		sun	sun	dark	dark	dark	dark	dark	dark	dark	moon	moon	sun
3	503	1941	250	1219	37%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	moon	sun
4	501	1942	340	1316	27%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	moon	sun
5	459	1944	427	1420	18%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
6	457	1945	509	1530	10%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
7	455	1947	547	1644	4%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
8	453	1948	623	1801	1%	New	sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
9	451	1950	656	1918	0%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
10	449	1951	730	2036	2%		sun	sun	moon	dark	dark	dark	dark	dark	dark	dark	dark	sun
11	446	1953	805	2153	7%		sun	sun	moon	moon	dark	dark	dark	dark	dark	dark	dark	sun
12	444	1955	841	2307	15%		sun	sun	moon	moon	moon	dark	dark	dark	dark	dark	dark	sun
13	442	1956	922	0	24%		sun	sun	moon	moon	moon	moon	dark	dark	dark	dark	dark	sun
14	440	1958	1007	17	35%		sun	sun	moon	moon	moon	moon	moon	dark	dark	dark	dark	sun
15	438	1959	1057	120	46%	First Qrtr	sun	sun	moon	moon	moon	moon	moon	moon	dark	dark	dark	sun
16	436	2001	1151	217	57%		sun	sun	moon	moon	moon	moon	moon	moon	moon	dark	dark	sun
17	434	2003	1250	306	67%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	dark	sun
18	431	2004	1350	348	76%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
19	429	2006	1452	425	84%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
20	427	2008	1553	457	91%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
21	425	2009	1654	525	96%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
22	422	2011	1755	552	99%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
23	420	2013	1855	618	100%	Full	sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
24	418	2014	1955	643	99%		sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
25	415	2016	2054	710	97%		sun	sun	dark	moon	moon	moon	moon	moon	moon	moon	sun	sun
26	413	2018	2153	738	93%		sun	sun	dark	dark	moon	moon	moon	moon	moon	moon	sun	sun
27	411	2019	2251	809	87%		sun	sun	dark	dark	dark	moon	moon	moon	moon	moon	sun	sun
28	408	2021	2348	845	80%		sun	sun	dark	dark	dark	dark	moon	moon	moon	moon	sun	sun
29	406	2023	0	925	72%		sun	sun	dark	dark	dark	dark	dark	moon	moon	moon	sun	sun
30	404	2025	42	1011	63%		sun	sun	dark	dark	dark	dark	dark	dark	moon	moon	sun	sun
31	401	2027	132	1103	53%	Last Qrtr	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 12:00 AM		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	2028	219	1202	43%		sun	sun	dark	dark	dark	dark	dark	dark	dark	moon	sun	sun
2	357	2030	301	1307	33%		sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	sun	sun
3	354	2032	340	1418	23%		sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
4	352	2034	416	1531	14%		sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
5	349	2036	450	1648	7%		sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
6	347	2038	524	1807	2%		sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
7	344	2040	558	1926	0%	New	sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
8	342	2042	634	2044	1%		sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
9	339	2044	714	2158	5%		sun	sun	sun	moon	dark	dark	dark	dark	dark	dark	sun	sun
10	337	2046	759	2308	12%		sun	sun	sun	moon	moon	dark	dark	dark	dark	dark	sun	sun
11	334	2048	848	0	21%		sun	sun	sun	moon	moon	moon	dark	dark	dark	dark	sun	sun
12	332	2050	943	10	31%		sun	sun	sun	moon	moon	moon	moon	dark	dark	sun	sun	sun
13	329	2052	1042	103	41%	First Qrtr	sun	sun	sun	moon	moon	moon	moon	moon	dark	sun	sun	sun
14	327	2054	1143	148	52%		sun	sun	sun	moon	moon	moon	moon	moon	dark	sun	sun	sun
15	324	2056	1245	227	62%		sun	sun	sun	moon	moon	moon	moon	moon	moon	sun	sun	sun
16	322	2058	1346	300	72%		sun	sun	sun	moon	moon	moon	moon	moon	moon	sun	sun	sun
17	319	2100	1448	330	80%		sun	sun	sun	moon	moon	moon	moon	moon	moon	sun	sun	sun
18	317	2102	1548	357	87%		sun	sun	sun	moon	moon	moon	moon	moon	moon	sun	sun	sun
19	314	2104	1648	422	93%		sun	sun	sun	moon	moon	moon	moon	moon	moon	sun	sun	sun
20	312	2106	1748	448	97%		sun	sun	sun	moon	moon	moon	moon	moon	moon	sun	sun	sun
21	309	2108	1848	513	99%	Full	sun	sun	sun	moon	moon	moon	moon	moon	moon	sun	sun	sun
22	306	2111	1947	541	100%		sun	sun	sun	moon	moon	moon	moon	moon	moon	sun	sun	sun
23	304	2113	2046	611	99%		sun	sun	sun	moon	moon	moon	moon	moon	moon	sun	sun	sun
24	301	2115	2143	645	96%		sun	sun	sun	dark	moon	moon	moon	moon	moon	sun	sun	sun
25	259	2117	2238	723	91%		sun	sun	sun	dark	dark	moon	moon	moon	moon	sun	sun	sun
26	256	2120	2329	807	85%		sun	sun	sun	dark	dark	moon	moon	moon	moon	sun	sun	sun
27	254	2122	0	856	77%		sun	sun	sun	dark	dark	dark	moon	moon	moon	sun	sun	sun
28	251	2124	16	952	69%		sun	sun	sun	dark	dark	dark	dark	moon	moon	sun	sun	sun
29	248	2127	59	1054	59%	Last Qrtr	sun	sun	sun	dark	dark	dark	dark	dark	moon	sun	sun	sun
30	246	2129	138	1200	48%		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 12:00 AM		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	2131	214	1309	37%		sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun
2	241	2134	247	1422	27%		sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun
3	238	2136	319	1538	17%		sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun
4	235	2139	352	1656	9%		sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun
5	233	2141	426	1814	3%		sun	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun
6	230	2144	504	1932	0%	New	sun	sun	sun	sun	dark	dark	dark	dark	sun	sun	sun	sun
7	228	2146	546	2046	1%		sun	sun	sun	sun	dark	dark	dark	dark	sun	sun	sun	sun
8	225	2149	634	2154	4%		sun	sun	sun	sun	dark	dark	dark	dark	sun	sun	sun	sun
9	223	2151	728	2253	9%		sun	sun	sun	sun	moon	dark	dark	dark	sun	sun	sun	sun
10	220	2154	828	2344	17%		sun	sun	sun	sun	moon	moon	dark	dark	sun	sun	sun	sun
11	217	2156	930	0	26%		sun	sun	sun	sun	moon	moon	dark	dark	sun	sun	sun	sun
12	215	2159	1033	26	36%		sun	sun	sun	sun	moon	moon	moon	dark	sun	sun	sun	sun
13	212	2201	1137	102	46%	First Qrtr	sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
14	210	2204	1239	133	56%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
15	207	2206	1340	201	66%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
16	205	2209	1441	227	75%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
17	202	2212	1540	252	82%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
18	200	2214	1640	318	89%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
19	157	2217	1740	344	94%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
20	155	2219	1839	413	98%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
21	152	2222	1937	445	100%	Full	sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
22	150	2225	2034	522	100%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
23	147	2227	2127	604	98%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
24	145	2230	2216	652	94%		sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
25	142	2232	2300	746	89%		sun	sun	sun	sun	sun	moon	moon	moon	sun	sun	sun	sun
26	140	2235	2340	846	81%		sun	sun	sun	sun	sun	dark	moon	moon	sun	sun	sun	sun
27	138	2238	0	950	73%		sun	sun	sun	sun	sun	dark	moon	moon	sun	sun	sun	sun
28	135	2240	16	1057	63%		sun	sun	sun	sun	sun	dark	dark	moon	sun	sun	sun	sun
29	133	2243	49	1207	52%	Last Qrtr	sun	sun	sun	sun	sun	dark	dark	moon	sun	sun	sun	sun
30	131	2245	120	1319	41%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
31	129	2248	151	1433	30%		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 12:00 AM		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	223	1549	20%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
2	124	2253	258	1705	11%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
3	122	2255	336	1820	5%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
4	120	2257	421	1932	1%	New	sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
5	118	2300	512	2037	0%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
6	116	2302	609	2133	2%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
7	115	2304	711	2221	7%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
8	113	2306	816	2301	13%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
9	111	2308	921	2335	22%		sun	sun	sun	sun	sun	moon	dark	sun	sun	sun	sun	sun
10	110	2310	1026	0	31%		sun	sun	sun	sun	sun	moon	dark	sun	sun	sun	sun	sun
11	108	2311	1129	4	40%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
12	107	2313	1230	31	50%	First Qrtr	sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
13	106	2314	1331	57	60%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
14	105	2316	1431	122	69%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
15	104	2317	1530	148	77%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
16	103	2318	1630	216	84%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
17	103	2318	1729	246	91%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
18	103	2319	1827	321	95%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
19	102	2320	1922	401	99%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
20	102	2320	2013	447	100%	Full	sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
21	103	2320	2100	540	99%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
22	103	2320	2142	638	96%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
23	104	2319	2220	742	91%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
24	104	2319	2253	848	84%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
25	105	2318	2325	957	76%		sun	sun	sun	sun	sun	moon	moon	sun	sun	sun	sun	sun
26	106	2317	2355	1108	66%		sun	sun	sun	sun	sun	dark	moon	sun	sun	sun	sun	sun
27	108	2316	0	1220	55%	Last Qrtr	sun	sun	sun	sun	sun	dark	moon	sun	sun	sun	sun	sun
28	109	2315	26	1333	44%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
29	111	2314	58	1447	32%		sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
30	112	2313	133	1600	22%		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 12:00 AM	
1	114	2311	213	1712	13%	
2	116	2310	300	1819	6%	
3	118	2308	353	1919	2%	
4	120	2306	452	2011	0%	New
5	122	2304	556	2056	1%	
6	124	2302	702	2133	4%	
7	127	2300	808	2205	10%	
8	129	2258	913	2234	17%	
9	131	2256	1016	2300	25%	
10	134	2254	1118	2326	34%	
11	136	2252	1219	2351	43%	First Qrtr
12	139	2249	1319	0	53%	
13	141	2247	1418	18	62%	
14	144	2245	1517	47	71%	
15	146	2243	1616	120	79%	
16	149	2240	1712	158	87%	
17	151	2238	1806	241	93%	
18	154	2235	1855	331	97%	
19	156	2233	1940	428	99%	Full
20	159	2230	2020	530	100%	
21	201	2228	2056	637	98%	
22	204	2225	2129	747	93%	
23	207	2223	2200	858	87%	
24	209	2220	2230	1010	78%	
25	212	2218	2302	1123	68%	
26	214	2215	2335	1236	57%	Last Qrtr
27	217	2213	0	1348	46%	
28	219	2210	13	1459	35%	
29	222	2208	55	1606	24%	
30	224	2205	144	1708	15%	
31	227	2202	239	1802	8%	

Beginning of One-Hour Period

DST>>	Evening 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
1	sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
2	sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
3	sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
4	sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
5	sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
6	sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
7	sun	sun	sun	sun	sun	dark	dark	sun	sun	sun	sun	sun
8	sun	sun	sun	sun	sun	dark	dark	dark	sun	sun	sun	sun
9	sun	sun	sun	sun	sun	dark	dark	dark	sun	sun	sun	sun
10	sun	sun	sun	sun	sun	dark	dark	dark	sun	sun	sun	sun
11	sun	sun	sun	sun	sun	moon	dark	dark	sun	sun	sun	sun
12	sun	sun	sun	sun	sun	moon	dark	dark	sun	sun	sun	sun
13	sun	sun	sun	sun	sun	moon	moon	dark	sun	sun	sun	sun
14	sun	sun	sun	sun	sun	moon	moon	dark	sun	sun	sun	sun
15	sun	sun	sun	sun	sun	moon	moon	moon	sun	sun	sun	sun
16	sun	sun	sun	sun	sun	moon	moon	moon	sun	sun	sun	sun
17	sun	sun	sun	sun	sun	moon	moon	moon	sun	sun	sun	sun
18	sun	sun	sun	sun	sun	moon	moon	moon	sun	sun	sun	sun
19	sun	sun	sun	sun	sun	moon	moon	moon	sun	sun	sun	sun
20	sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
21	sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
22	sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
23	sun	sun	sun	sun	moon	moon	moon	moon	sun	sun	sun	sun
24	sun	sun	sun	sun	dark	moon	moon	moon	sun	sun	sun	sun
25	sun	sun	sun	sun	dark	moon	moon	moon	sun	sun	sun	sun
26	sun	sun	sun	sun	dark	dark	moon	moon	sun	sun	sun	sun
27	sun	sun	sun	sun	dark	dark	moon	moon	sun	sun	sun	sun
28	sun	sun	sun	sun	dark	dark	dark	moon	sun	sun	sun	sun
29	sun	sun	sun	sun	dark	dark	dark	dark	sun	sun	sun	sun
30	sun	sun	sun	sun	dark	dark	dark	dark	sun	sun	sun	sun
31	sun	sun	sun	sun	dark	dark	dark	dark	sun	sun	sun	sun

August

Day	astronomical twilight begin	astronomical twilight end	moon rise	moon set	% Moon Illuminated at 12:00 AM	
1	229	2200	340	1849	3%	
2	232	2157	445	1929	0%	New
3	234	2155	551	2004	0%	
4	237	2152	656	2034	2%	
5	239	2149	801	2102	7%	
6	241	2147	904	2128	12%	
7	244	2144	1005	2154	20%	
8	246	2142	1106	2220	28%	
9	249	2139	1206	2248	37%	
10	251	2136	1305	2319	46%	First Qrtr
11	253	2134	1403	2354	56%	
12	255	2131	1500	0	65%	
13	258	2129	1555	35	74%	
14	300	2126	1646	121	82%	
15	302	2123	1733	215	89%	
16	304	2121	1815	315	95%	
17	306	2118	1854	420	99%	
18	309	2116	1929	530	100%	Full
19	311	2113	2001	643	99%	
20	313	2110	2033	756	95%	
21	315	2108	2104	911	89%	
22	317	2105	2138	1025	81%	
23	319	2103	2214	1139	71%	
24	321	2100	2255	1251	60%	Last Qrtr
25	323	2058	2341	1359	48%	
26	325	2055	0	1501	37%	
27	327	2053	34	1557	26%	
28	329	2050	131	1645	17%	
29	331	2048	233	1727	10%	
30	333	2045	338	1803	4%	
31	335	2042	443	1835	1%	

Beginning of One-Hour Period

DST>>	Evening 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
1	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun	
2	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun	
3	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun	
4	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun	
5	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun	
6	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun	
7	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun	
8	sun	sun	sun	dark	dark	dark	dark	dark	sun	sun	sun	
9	sun	sun	sun	moon	dark	dark	dark	dark	sun	sun	sun	
10	sun	sun	sun	moon	dark	dark	dark	dark	sun	sun	sun	
11	sun	sun	sun	moon	moon	dark	dark	dark	sun	sun	sun	
12	sun	sun	sun	moon	moon	moon	dark	dark	sun	sun	sun	
13	sun	sun	sun	moon	moon	moon	dark	dark	sun	sun	sun	
14	sun	sun	sun	moon	moon	moon	moon	dark	sun	sun	sun	
15	sun	sun	sun	moon	moon	moon	moon	moon	sun	sun	sun	
16	sun	sun	sun	moon	moon	moon	moon	moon	sun	sun	sun	
17	sun	sun	sun	moon	moon	moon	moon	moon	sun	sun	sun	
18	sun	sun	sun	moon	moon	moon	moon	moon	sun	sun	sun	
19	sun	sun	sun	moon	moon	moon	moon	moon	sun	sun	sun	
20	sun	sun	sun	moon	moon	moon	moon	moon	sun	sun	sun	
21	sun	sun	sun	moon	moon	moon	moon	moon	sun	sun	sun	
22	sun	sun	sun	dark	moon	moon	moon	moon	sun	sun	sun	
23	sun	sun	sun	dark	moon	moon	moon	moon	sun	sun	sun	
24	sun	sun	sun	dark	dark	moon	moon	moon	sun	sun	sun	
25	sun	sun	sun	dark	dark	dark	moon	moon	sun	sun	sun	
26	sun	sun	sun	dark	dark	dark	dark	moon	sun	sun	sun	
27	sun	sun	sun	dark	dark	dark	dark	dark	moon	sun	sun	
28	sun	sun	sun	dark	dark	dark	dark	dark	dark	moon	sun	
29	sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	
30	sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	
31	sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	

September

Day	astronomical twilight begin	astronomical twilight end	moon rise	moon set	% Moon Illuminated at 12:00 AM	
1	337	2040	547	1903	0%	New
2	338	2037	651	1930	1%	
3	340	2035	753	1956	4%	
4	342	2032	854	2022	8%	
5	344	2030	954	2049	14%	
6	346	2028	1053	2119	22%	
7	348	2025	1152	2152	30%	
8	349	2023	1249	2229	39%	
9	351	2020	1344	2312	49%	First Qrtr
10	353	2018	1435	0	58%	
11	355	2015	1523	2	68%	
12	356	2013	1607	58	77%	
13	358	2011	1647	200	85%	
14	400	2008	1724	308	92%	
15	401	2006	1758	419	97%	
16	403	2004	1831	534	100%	Full
17	405	2001	1903	650	100%	
18	406	1959	1937	807	97%	
19	408	1957	2013	924	91%	
20	409	1954	2053	1039	83%	
21	411	1952	2139	1150	73%	
22	412	1950	2230	1255	62%	
23	414	1947	2326	1354	51%	Last Qrtr
24	416	1945	0	1444	40%	
25	417	1943	27	1528	30%	
26	419	1941	130	1605	21%	
27	420	1939	233	1637	13%	
28	422	1936	337	1706	7%	
29	423	1934	440	1733	3%	
30	425	1932	543	1759	0%	New

Beginning of One-Hour Period

DST>>	Evening 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
1	sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
2	sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
3	sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
4	sun	sun	sun	dark	dark	dark	dark	dark	dark	dark	sun	sun
5	sun	sun	moon	dark	dark	dark	dark	dark	dark	dark	sun	sun
6	sun	sun	moon	dark	dark	dark	dark	dark	dark	dark	sun	sun
7	sun	sun	moon	moon	dark	dark	dark	dark	dark	dark	sun	sun
8	sun	sun	moon	moon	dark	dark	dark	dark	dark	dark	sun	sun
9	sun	sun	moon	moon	moon	dark	dark	dark	dark	dark	sun	sun
10	sun	sun	moon	moon	moon	moon	dark	dark	dark	dark	sun	sun
11	sun	sun	moon	moon	moon	moon	moon	dark	dark	dark	sun	sun
12	sun	sun	moon	moon	moon	moon	moon	moon	dark	dark	sun	sun
13	sun	sun	moon	moon	moon	moon	moon	moon	moon	dark	sun	sun
14	sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
15	sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
16	sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
17	sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
18	sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
19	sun	sun	moon	moon	moon	moon	moon	moon	moon	moon	sun	sun
20	sun	sun	dark	moon	moon	moon	moon	moon	moon	moon	sun	sun
21	sun	sun	dark	dark	moon	moon	moon	moon	moon	moon	sun	sun
22	sun	sun	dark	dark	dark	moon	moon	moon	moon	moon	sun	sun
23	sun	sun	dark	dark	dark	moon	moon	moon	moon	moon	sun	sun
24	sun	sun	dark	dark	dark	dark	moon	moon	moon	moon	sun	sun
25	sun	sun	dark	dark	dark	dark	dark	dark	moon	moon	sun	sun
26	sun	sun	dark	dark	dark	dark	dark	dark	dark	moon	sun	sun
27	sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	sun	sun
28	sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	sun	sun
29	sun	sun	dark	dark	dark	dark	dark	dark	dark	dark	sun	sun
30	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 12:00 AM	
1	426	1930	644	1824	0%	
2	428	1928	744	1851	2%	
3	429	1926	844	1920	5%	
4	431	1924	943	1951	10%	
5	432	1922	1040	2027	16%	
6	434	1920	1136	2107	24%	
7	435	1918	1228	2153	32%	
8	437	1916	1316	2245	42%	First Qrtr
9	438	1914	1401	2343	52%	
10	439	1912	1442	0	62%	
11	441	1910	1519	46	72%	
12	442	1908	1553	155	81%	
13	444	1906	1626	307	89%	
14	445	1904	1658	422	95%	
15	447	1902	1731	539	99%	Full
16	448	1901	1807	658	100%	
17	449	1859	1846	816	98%	
18	451	1857	1931	932	93%	
19	452	1855	2021	1043	86%	
20	453	1854	2118	1147	76%	
21	455	1852	2219	1242	66%	
22	456	1850	2322	1328	55%	Last Qrtr
23	458	1849	0	1407	44%	
24	459	1847	26	1441	34%	
25	500	1845	130	1510	25%	
26	502	1844	233	1537	17%	
27	503	1842	335	1603	10%	
28	504	1841	436	1628	5%	
29	506	1839	537	1654	2%	
30	507	1838	637	1722	0%	New
31	508	1837	736	1752	0%	

Beginning of One-Hour Period

DST>>	Evening 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
1	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun	sun
2	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun	sun
3	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
4	sun	moon	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
5	sun	moon	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
6	sun	moon	moon	dark	dark	dark	dark	dark	dark	dark	dark	sun
7	sun	moon	moon	moon	dark	dark	dark	dark	dark	dark	dark	sun
8	sun	moon	moon	moon	moon	dark	dark	dark	dark	dark	dark	sun
9	sun	moon	moon	moon	moon	moon	dark	dark	dark	dark	dark	sun
10	sun	moon	moon	moon	moon	moon	moon	dark	dark	dark	dark	sun
11	sun	moon	moon	moon	moon	moon	moon	moon	dark	dark	dark	sun
12	sun	moon	moon	moon	moon	moon	moon	moon	moon	dark	dark	sun
13	sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	dark	sun
14	sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
15	sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
16	sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
17	sun	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
18	sun	dark	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
19	sun	dark	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
20	sun	dark	dark	moon	moon	moon	moon	moon	moon	moon	moon	sun
21	sun	dark	dark	dark	moon	moon	moon	moon	moon	moon	moon	sun
22	sun	dark	dark	dark	dark	moon	moon	moon	moon	moon	moon	sun
23	sun	dark	dark	dark	dark	dark	moon	moon	moon	moon	moon	sun
24	sun	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon	sun
25	sun	dark	dark	dark	dark	dark	dark	dark	dark	moon	moon	sun
26	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	moon	sun
27	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
28	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
29	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
30	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
31	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun

November

Day	astronomical twilight begin	astronomical twilight end	moon rise	moon set	% Moon Illuminated at 12:00 AM	
1	510	1835	834	1826	2%	
2	511	1834	931	1904	6%	
3	512	1833	1024	1948	11%	
4	514	1831	1114	2037	18%	
5	515	1830	1159	2132	26%	
6	516	1829	1240	2232	35%	
7	518	1828	1317	2336	45%	First Qrtr
8	519	1827	1351	0	55%	
9	520	1825	1423	44	66%	
10	522	1824	1454	155	76%	
11	523	1823	1525	310	85%	
12	524	1822	1559	426	92%	
13	525	1821	1636	545	97%	
14	527	1820	1718	704	100%	Full
15	528	1820	1806	820	99%	
16	529	1819	1902	930	95%	
17	530	1818	2003	1032	89%	
18	532	1817	2108	1124	81%	
19	533	1816	2215	1207	71%	
20	534	1816	2320	1244	61%	
21	535	1815	0	1315	50%	Last Qrtr
22	536	1814	25	1343	40%	
23	538	1814	127	1409	31%	
24	539	1813	229	1434	22%	
25	540	1813	330	1459	15%	
26	541	1812	430	1526	9%	
27	542	1812	529	1555	4%	
28	543	1812	628	1627	1%	
29	544	1811	725	1703	0%	New
30	545	1811	820	1745	1%	

Beginning of One-Hour Period

Day	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	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
2	sun	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
3	sun	moon	dark	dark	dark	dark	dark	dark	dark	dark	dark	sun
4	sun	moon	moon	dark	dark	dark	dark	dark	dark	dark	dark	sun
5	moon	moon	moon	moon	dark	dark	dark	dark	dark	dark	dark	sun
6	moon	moon	moon	moon	moon	dark	dark	dark	dark	dark	dark	sun
7	moon	moon	moon	moon	moon	moon	dark	dark	dark	dark	dark	sun
8	moon	moon	moon	moon	moon	moon	moon	dark	dark	dark	dark	sun
9	moon	moon	moon	moon	moon	moon	moon	moon	dark	dark	dark	sun
10	moon	moon	moon	moon	moon	moon	moon	moon	moon	dark	dark	sun
11	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	dark	sun
12	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
13	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
14	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
15	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	sun
16	dark	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
17	dark	dark	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
18	dark	dark	dark	moon	moon	moon	moon	moon	moon	moon	moon	moon
19	dark	dark	dark	dark	moon	moon	moon	moon	moon	moon	moon	moon
20	dark	dark	dark	dark	dark	moon	moon	moon	moon	moon	moon	moon
21	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon	moon	moon
22	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon	moon
23	dark	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon
24	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	moon	moon
25	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	moon
26	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	moon
27	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
28	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
29	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
30	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark

December

Day	astronomical twilight begin	astronomical twilight end	moon rise	moon set	% Moon Illuminated at 12:00 AM	
1	546	1811	912	1833	3%	
2	547	1810	959	1926	7%	
3	548	1810	1041	2024	13%	
4	549	1810	1119	2126	21%	
5	550	1810	1153	2231	29%	
6	551	1810	1225	2339	39%	
7	552	1810	1255	0	50%	First Qrtr
8	553	1810	1324	49	61%	
9	554	1810	1355	202	71%	
10	555	1810	1429	317	81%	
11	556	1810	1507	434	89%	
12	556	1810	1551	550	96%	
13	557	1811	1642	704	99%	Full
14	558	1811	1741	812	100%	
15	558	1811	1846	911	97%	
16	559	1811	1954	1000	92%	
17	600	1812	2103	1041	85%	
18	600	1812	2210	1116	77%	
19	601	1813	2315	1146	67%	
20	602	1813	0	1213	58%	Last Qrtr
21	602	1814	19	1239	48%	
22	602	1814	120	1304	38%	
23	603	1815	221	1330	29%	
24	603	1815	321	1358	21%	
25	604	1816	420	1428	14%	
26	604	1817	518	1503	8%	
27	604	1817	614	1543	4%	
28	605	1818	708	1629	1%	New
29	605	1819	757	1720	0%	
30	605	1820	842	1817	1%	
31	605	1820	922	1918	4%	
1	605	1821	541	1405		

Beginning of One-Hour Period

Day	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	moon	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
2	moon	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
3	moon	moon	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
4	moon	moon	moon	dark	dark	dark	dark	dark	dark	dark	dark	dark
5	moon	moon	moon	moon	moon	dark	dark	dark	dark	dark	dark	dark
6	moon	moon	moon	moon	moon	moon	dark	dark	dark	dark	dark	dark
7	moon	moon	moon	moon	moon	moon	moon	dark	dark	dark	dark	dark
8	moon	moon	moon	moon	moon	moon	moon	moon	dark	dark	dark	dark
9	moon	moon	moon	moon	moon	moon	moon	moon	moon	dark	dark	dark
10	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	dark
11	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
12	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
13	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
14	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
15	dark	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
16	dark	dark	moon	moon	moon	moon	moon	moon	moon	moon	moon	moon
17	dark	dark	dark	moon	moon	moon	moon	moon	moon	moon	moon	moon
18	dark	dark	dark	dark	moon	moon	moon	moon	moon	moon	moon	moon
19	dark	dark	dark	dark	dark	moon	moon	moon	moon	moon	moon	moon
20	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon	moon	moon
21	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon	moon
22	dark	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon	moon
23	dark	dark	dark	dark	dark	dark	dark	dark	dark	moon	moon	moon
24	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	moon	moon
25	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	moon
26	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
27	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
28	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
29	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
30	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark
31	moon	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark	dark

About This Calendar

This calendar was created using data from the U.S. Naval 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 as of 12 AM local time for the specified date, 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.

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