

| Day UTC | Sun-set | Civ -twilight | Naut end- | Astr | Astr twilight | Naut begin | Civ  | Sun-rise | R/S      | trans | Moon RA | Dec    | Ph   |       |  |  |  |  |
|---------|---------|---------------|-----------|------|---------------|------------|------|----------|----------|-------|---------|--------|------|-------|--|--|--|--|
| *****   |         |               |           |      |               |            |      |          | JAN 2009 |       |         |        |      | ***** |  |  |  |  |
| 01      | 0051    | 0119          | 0150      | 0221 | 1328          | 1358       | 1430 | 1457     | S0456    | 2311- | 22 16.7 | -08 36 | 19+  |       |  |  |  |  |
| 02      | 0052    | 0120          | 0151      | 0222 | 1328          | 1358       | 1430 | 1457     | S0555    | 2353- | 23 01.2 | -03 06 | 28+  |       |  |  |  |  |
| 03      | 0053    | 0120          | 0152      | 0222 | 1328          | 1359       | 1430 | 1458     | S0654    | 0036  | 23 46.3 | +02 39 | 37+  |       |  |  |  |  |
| 04      | 0054    | 0121          | 0153      | 0223 | 1328          | 1359       | 1430 | 1458     | S0756    | 0119  | 00 33.2 | +08 26 | 47+  |       |  |  |  |  |
| 05      | 0054    | 0122          | 0153      | 0224 | 1328          | 1359       | 1430 | 1458     | S0901    | 0206  | 01 23.0 | +14 02 | 58+  |       |  |  |  |  |
| 06      | 0055    | 0123          | 0154      | 0225 | 1329          | 1359       | 1430 | 1458     | S1009    | 0257  | 02 17.0 | +19 06 | 69+  |       |  |  |  |  |
| 07      | 0056    | 0124          | 0155      | 0225 | 1329          | 1359       | 1430 | 1458     | S1121    | 0353  | 03 16.2 | +23 15 | 79+  |       |  |  |  |  |
| 08      | 0057    | 0124          | 0156      | 0226 | 1329          | 1359       | 1430 | 1458     | S1233    | 0455  | 04 20.4 | +25 59 | 88+  |       |  |  |  |  |
| 09      | 0058    | 0125          | 0156      | 0227 | 1329          | 1359       | 1430 | 1458     | S1341    | 0600  | 05 28.4 | +26 52 | 95+  |       |  |  |  |  |
| 10      | 0059    | 0126          | 0157      | 0228 | 1329          | 1359       | 1430 | 1458     | S1441    | 0707  | 06 37.1 | +25 42 | 99+  |       |  |  |  |  |
| 11      | 0059    | 0127          | 0158      | 0228 | 1329          | 1359       | 1430 | 1458     | R0043    | 0812  | 07 43.6 | +22 33 | 100- |       |  |  |  |  |
| 12      | 0100    | 0128          | 0159      | 0229 | 1329          | 1359       | 1430 | 1457     | R0200    | 0911  | 08 45.8 | +17 49 | 98-  |       |  |  |  |  |
| 13      | 0101    | 0129          | 0200      | 0230 | 1329          | 1359       | 1430 | 1457     | R0314    | 1006  | 09 43.2 | +12 04 | 93-  |       |  |  |  |  |
| 14      | 0102    | 0130          | 0201      | 0231 | 1329          | 1359       | 1430 | 1457     | R0424    | 1055  | 10 36.3 | +05 49 | 86-  |       |  |  |  |  |
| 15      | 0103    | 0130          | 0201      | 0232 | 1329          | 1359       | 1430 | 1457     | R0530    | 1142  | 11 26.3 | -00 30 | 77-  |       |  |  |  |  |
| 16      | 0104    | 0131          | 0202      | 0232 | 1328          | 1359       | 1429 | 1457     | R0633    | 1228  | 12 14.5 | -06 35 | 67-  |       |  |  |  |  |
| 17      | 0105    | 0132          | 0203      | 0233 | 1328          | 1358       | 1429 | 1456     | R0735    | 1312  | 13 02.0 | -12 10 | 57-  |       |  |  |  |  |
| 18      | 0106    | 0133          | 0204      | 0234 | 1328          | 1358       | 1429 | 1456     | R0836    | 1358  | 13 49.8 | -17 05 | 47-  |       |  |  |  |  |
| 19      | 0107    | 0134          | 0205      | 0235 | 1328          | 1358       | 1428 | 1456     | R0936    | 1444  | 14 38.5 | -21 11 | 37-  |       |  |  |  |  |
| 20      | 0108    | 0135          | 0206      | 0236 | 1328          | 1358       | 1428 | 1455     | R1035    | 1533  | 15 28.6 | -24 18 | 29-  |       |  |  |  |  |
| 21      | 0109    | 0136          | 0207      | 0237 | 1327          | 1357       | 1428 | 1455     | R1132    | 1622  | 16 19.9 | -26 21 | 20-  |       |  |  |  |  |
| 22      | 0110    | 0137          | 0207      | 0237 | 1327          | 1357       | 1427 | 1454     | R1226    | 1713  | 17 12.2 | -27 14 | 13-  |       |  |  |  |  |
| 23      | 0111    | 0138          | 0208      | 0238 | 1327          | 1356       | 1427 | 1454     | R1314    | 1804  | 18 04.6 | -26 54 | 8-   |       |  |  |  |  |
| 24      | 0112    | 0139          | 0209      | 0239 | 1326          | 1356       | 1426 | 1453     | R1357    | 1853  | 18 56.3 | -25 23 | 4-   |       |  |  |  |  |
| 25      | 0113    | 0140          | 0210      | 0240 | 1326          | 1356       | 1426 | 1453     | R1435    | 1941  | 19 46.5 | -22 46 | 1-   |       |  |  |  |  |
| 26      | 0114    | 0141          | 0211      | 0241 | 1325          | 1355       | 1425 | 1452     | S0052    |       | 20 35.0 | -19 11 | 0-   |       |  |  |  |  |
| 27      | 0115    | 0142          | 0212      | 0242 | 1325          | 1355       | 1425 | 1452     | S0151    | 2026- | 21 21.7 | -14 48 | 1+   |       |  |  |  |  |
| 28      | 0116    | 0143          | 0213      | 0243 | 1324          | 1354       | 1424 | 1451     | S0250    | 2110- | 22 07.1 | -09 47 | 4+   |       |  |  |  |  |
| 29      | 0117    | 0144          | 0214      | 0243 | 1324          | 1354       | 1424 | 1450     | S0349    | 2153- | 22 51.7 | -04 21 | 8+   |       |  |  |  |  |
| 30      | 0118    | 0144          | 0215      | 0244 | 1323          | 1353       | 1423 | 1450     | S0449    | 2235- | 23 36.4 | +01 21 | 15+  |       |  |  |  |  |
| 31      | 0119    | 0145          | 0216      | 0245 | 1323          | 1352       | 1423 | 1449     | S0549    | 2318- | 00 22.3 | +07 04 | 22+  |       |  |  |  |  |
| *****   |         |               |           |      |               |            |      |          | FEB 2009 |       |         |        |      | ***** |  |  |  |  |
| 01      | 0120    | 0146          | 0216      | 0246 | 1322          | 1352       | 1422 | 1448     | S0652    | 0003  | 01 10.3 | +12 37 | 32+  |       |  |  |  |  |
| 02      | 0121    | 0147          | 0217      | 0247 | 1322          | 1351       | 1421 | 1447     | S0757    | 0051  | 02 01.6 | +17 42 | 42+  |       |  |  |  |  |
| 03      | 0122    | 0148          | 0218      | 0248 | 1321          | 1350       | 1420 | 1447     | S0906    | 0144  | 02 57.0 | +22 00 | 53+  |       |  |  |  |  |
| 04      | 0123    | 0149          | 0219      | 0249 | 1320          | 1350       | 1420 | 1446     | S1016    | 0241  | 03 57.0 | +25 07 | 64+  |       |  |  |  |  |
| 05      | 0124    | 0150          | 0220      | 0250 | 1320          | 1349       | 1419 | 1445     | S1123    | 0343  | 05 01.0 | +26 40 | 75+  |       |  |  |  |  |
| 06      | 0125    | 0151          | 0221      | 0250 | 1319          | 1348       | 1418 | 1444     | S1225    | 0447  | 06 07.1 | +26 22 | 85+  |       |  |  |  |  |
| 07      | 0126    | 0152          | 0222      | 0251 | 1318          | 1348       | 1417 | 1443     | S1318    | 0551  | 07 12.9 | +24 08 | 92+  |       |  |  |  |  |
| 08      | 0127    | 0153          | 0223      | 0252 | 1317          | 1347       | 1416 | 1442     | S1402    | 0652  | 08 16.0 | +20 10 | 98+  |       |  |  |  |  |
| 09      | 0128    | 0154          | 0224      | 0253 | 1317          | 1346       | 1416 | 1442     | S1440    | 0748  | 09 15.4 | +14 53 | 100+ |       |  |  |  |  |
| 10      | 0129    | 0155          | 0224      | 0254 | 1316          | 1345       | 1415 | 1441     | R0158    | 0841  | 10 10.8 | +08 45 | 99-  |       |  |  |  |  |
| 11      | 0130    | 0156          | 0225      | 0255 | 1315          | 1344       | 1414 | 1440     | R0307    | 0930  | 11 03.2 | +02 18 | 96-  |       |  |  |  |  |
| 12      | 0131    | 0157          | 0226      | 0256 | 1314          | 1343       | 1413 | 1439     | R0414    | 1017  | 11 53.5 | -04 07 | 90-  |       |  |  |  |  |
| 13      | 0132    | 0158          | 0227      | 0256 | 1313          | 1342       | 1412 | 1438     | R0518    | 1104  | 12 42.8 | -10 07 | 83-  |       |  |  |  |  |
| 14      | 0133    | 0158          | 0228      | 0257 | 1312          | 1341       | 1411 | 1437     | R0621    | 1150  | 13 32.0 | -15 29 | 74-  |       |  |  |  |  |
| 15      | 0134    | 0159          | 0229      | 0258 | 1311          | 1340       | 1410 | 1436     | R0724    | 1237  | 14 21.8 | -20 01 | 64-  |       |  |  |  |  |
| 16      | 0135    | 0200          | 0230      | 0259 | 1310          | 1339       | 1409 | 1435     | R0825    | 1326  | 15 12.7 | -23 33 | 55-  |       |  |  |  |  |
| 17      | 0135    | 0201          | 0231      | 0300 | 1309          | 1338       | 1408 | 1433     | R0923    | 1416  | 16 04.6 | -25 59 | 45-  |       |  |  |  |  |
| 18      | 0136    | 0202          | 0231      | 0301 | 1308          | 1337       | 1407 | 1432     | R1019    | 1507  | 16 57.3 | -27 13 | 36-  |       |  |  |  |  |
| 19      | 0137    | 0203          | 0232      | 0301 | 1307          | 1336       | 1406 | 1431     | R1109    | 1557  | 17 50.1 | -27 13 | 27-  |       |  |  |  |  |
| 20      | 0138    | 0204          | 0233      | 0302 | 1306          | 1335       | 1405 | 1430     | R1154    | 1647  | 18 42.2 | -26 01 | 19-  |       |  |  |  |  |
| 21      | 0139    | 0205          | 0234      | 0303 | 1305          | 1334       | 1404 | 1429     | R1234    | 1736  | 19 33.0 | -23 42 | 13-  |       |  |  |  |  |
| 22      | 0140    | 0206          | 0235      | 0304 | 1304          | 1333       | 1402 | 1428     | R1308    | 1822  | 20 22.2 | -20 22 | 7-   |       |  |  |  |  |
| 23      | 0141    | 0206          | 0236      | 0305 | 1303          | 1332       | 1401 | 1427     | R1339    | 1907  | 21 09.6 | -16 10 | 3-   |       |  |  |  |  |
| 24      | 0142    | 0207          | 0236      | 0306 | 1302          | 1331       | 1400 | 1425     | R1407    |       | 21 55.7 | -11 16 | 1-   |       |  |  |  |  |
| 25      | 0143    | 0208          | 0237      | 0306 | 1301          | 1330       | 1359 | 1424     | S0141    |       | 22 40.9 | -05 53 | 0+   |       |  |  |  |  |
| 26      | 0144    | 0209          | 0238      | 0307 | 1300          | 1329       | 1358 | 1423     | S0241    | 2033- | 23 26.1 | -00 11 | 2+   |       |  |  |  |  |
| 27      | 0145    | 0210          | 0239      | 0308 | 1258          | 1327       | 1357 | 1422     | S0342    | 2117- | 00 12.2 | +05 37 | 5+   |       |  |  |  |  |
| 28      | 0145    | 0211          | 0240      | 0309 | 1257          | 1326       | 1355 | 1421     | S0445    | 2202- | 01 00.0 | +11 15 | 11+  |       |  |  |  |  |

| Day UTC | Sun-set | Civ -twilight | Naut end- | Astr | Astr twilight | Naut begin | Civ  | Sun-rise | R/S      | trans | Moon RA | Dec    | Ph   |
|---------|---------|---------------|-----------|------|---------------|------------|------|----------|----------|-------|---------|--------|------|
| *****   |         |               |           |      |               |            |      |          | MAR 2009 |       |         |        |      |
| 01      | 0146    | 0212          | 0241      | 0310 | 1256          | 1325       | 1354 | 1419     | S0550    | 2249- | 01 50.5 | +16 27 | 18+  |
| 02      | 0147    | 0212          | 0242      | 0311 | 1255          | 1324       | 1353 | 1418     | S0658    | 2340- | 02 44.6 | +20 54 | 28+  |
| 03      | 0148    | 0213          | 0242      | 0311 | 1253          | 1323       | 1352 | 1417     | S0806    | 0035  | 03 42.5 | +24 15 | 38+  |
| 04      | 0149    | 0214          | 0243      | 0312 | 1252          | 1321       | 1350 | 1416     | S0913    | 0135  | 04 43.8 | +26 11 | 49+  |
| 05      | 0150    | 0215          | 0244      | 0313 | 1251          | 1320       | 1349 | 1414     | S1015    | 0236  | 05 47.2 | +26 25 | 61+  |
| 06      | 0151    | 0216          | 0245      | 0314 | 1250          | 1319       | 1348 | 1413     | S1109    | 0338  | 06 50.8 | +24 51 | 72+  |
| 07      | 0151    | 0217          | 0246      | 0315 | 1248          | 1317       | 1347 | 1412     | S1156    | 0438  | 07 52.6 | +21 36 | 82+  |
| 08      | 0152    | 0217          | 0246      | 0316 | 1247          | 1316       | 1345 | 1410     | S1235    | 0535  | 08 51.4 | +16 58 | 90+  |
| 09      | 0153    | 0218          | 0247      | 0316 | 1246          | 1315       | 1344 | 1409     | S1310    | 0628  | 09 47.0 | +11 18 | 96+  |
| 10      | 0154    | 0219          | 0248      | 0317 | 1244          | 1314       | 1343 | 1408     | S1341    | 0718  | 10 39.9 | +05 04 | 99+  |
| 11      | 0155    | 0220          | 0249      | 0318 | 1243          | 1312       | 1341 | 1406     | R0153    | 0806  | 11 30.8 | -01 22 | 100- |
| 12      | 0155    | 0221          | 0250      | 0319 | 1242          | 1311       | 1340 | 1405     | R0258    | 0853  | 12 20.8 | -07 36 | 98-  |
| 13      | 0156    | 0221          | 0251      | 0320 | 1240          | 1309       | 1339 | 1404     | R0403    | 0940  | 13 10.8 | -13 21 | 94-  |
| 14      | 0157    | 0222          | 0251      | 0321 | 1239          | 1308       | 1337 | 1402     | R0506    | 1027  | 14 01.5 | -18 20 | 88-  |
| 15      | 0158    | 0223          | 0252      | 0322 | 1237          | 1307       | 1336 | 1401     | R0609    | 1116  | 14 53.2 | -22 21 | 80-  |
| 16      | 0159    | 0224          | 0253      | 0322 | 1236          | 1305       | 1334 | 1400     | R0710    | 1207  | 15 45.9 | -25 15 | 72-  |
| 17      | 0200    | 0225          | 0254      | 0323 | 1235          | 1304       | 1333 | 1358     | R0808    | 1258  | 16 39.5 | -26 56 | 63-  |
| 18      | 0200    | 0225          | 0255      | 0324 | 1233          | 1303       | 1332 | 1357     | R0901    | 1349  | 17 33.0 | -27 21 | 53-  |
| 19      | 0201    | 0226          | 0255      | 0325 | 1232          | 1301       | 1330 | 1355     | R0948    | 1440  | 18 25.8 | -26 32 | 44-  |
| 20      | 0202    | 0227          | 0256      | 0326 | 1230          | 1300       | 1329 | 1354     | R1030    | 1528  | 19 17.3 | -24 34 | 35-  |
| 21      | 0203    | 0228          | 0257      | 0327 | 1229          | 1258       | 1328 | 1353     | R1106    | 1615  | 20 06.9 | -21 32 | 26-  |
| 22      | 0203    | 0229          | 0258      | 0328 | 1227          | 1257       | 1326 | 1351     | R1138    | 1701  | 20 54.9 | -17 37 | 18-  |
| 23      | 0204    | 0229          | 0259      | 0328 | 1226          | 1255       | 1325 | 1350     | R1208    | 1744  | 21 41.4 | -12 58 | 11-  |
| 24      | 0205    | 0230          | 0300      | 0329 | 1224          | 1254       | 1323 | 1348     | R1235    | 1828  | 22 27.0 | -07 43 | 6-   |
| 25      | 0206    | 0231          | 0300      | 0330 | 1223          | 1253       | 1322 | 1347     | R1302    | 1911  | 23 12.6 | -02 05 | 2-   |
| 26      | 0207    | 0232          | 0301      | 0331 | 1221          | 1251       | 1321 | 1346     | R1329    |       | 23 58.9 | +03 44 | 0-   |
| 27      | 0207    | 0233          | 0302      | 0332 | 1220          | 1250       | 1319 | 1344     | S0233    | 1957- | 00 47.0 | +09 30 | 1+   |
| 28      | 0208    | 0233          | 0303      | 0333 | 1218          | 1248       | 1318 | 1343     | S0339    | 2044- | 01 37.7 | +14 54 | 3+   |
| 29      | 0209    | 0234          | 0304      | 0334 | 1217          | 1247       | 1316 | 1342     | S0447    | 2135- | 02 31.7 | +19 37 | 8+   |
| 30      | 0210    | 0235          | 0305      | 0335 | 1215          | 1245       | 1315 | 1340     | S0557    | 2230- | 03 29.4 | +23 17 | 15+  |
| 31      | 0210    | 0236          | 0305      | 0336 | 1214          | 1244       | 1314 | 1339     | S0705    | 2329- | 04 30.3 | +25 32 | 24+  |
| *****   |         |               |           |      |               |            |      |          | APR 2009 |       |         |        |      |
| 01      | 0211    | 0237          | 0306      | 0337 | 1212          | 1243       | 1312 | 1338     | S0809    | 0030  | 05 33.1 | +26 08 | 35+  |
| 02      | 0212    | 0237          | 0307      | 0338 | 1211          | 1241       | 1311 | 1336     | S0906    | 0132  | 06 35.9 | +25 00 | 46+  |
| 03      | 0213    | 0238          | 0308      | 0338 | 1209          | 1240       | 1309 | 1335     | S0954    | 0232  | 07 36.8 | +22 14 | 58+  |
| 04      | 0214    | 0239          | 0309      | 0339 | 1208          | 1238       | 1308 | 1333     | S1034    | 0329  | 08 34.8 | +18 04 | 69+  |
| 05      | 0214    | 0240          | 0310      | 0340 | 1206          | 1237       | 1307 | 1332     | S1109    | 0421  | 09 29.6 | +12 52 | 79+  |
| 06      | 0215    | 0241          | 0311      | 0341 | 1205          | 1235       | 1305 | 1331     | S1140    | 0511  | 10 21.7 | +06 59 | 87+  |
| 07      | 0216    | 0241          | 0311      | 0342 | 1203          | 1234       | 1304 | 1329     | S1210    | 0558  | 11 11.9 | +00 48 | 94+  |
| 08      | 0217    | 0242          | 0312      | 0343 | 1201          | 1232       | 1303 | 1328     | S1238    | 0644  | 12 01.3 | -05 23 | 98+  |
| 09      | 0217    | 0243          | 0313      | 0344 | 1200          | 1231       | 1301 | 1327     | S1308    | 0731  | 12 50.8 | -11 15 | 100+ |
| 10      | 0218    | 0244          | 0314      | 0345 | 1158          | 1230       | 1300 | 1325     | R0250    | 0818  | 13 41.0 | -16 31 | 99-  |
| 11      | 0219    | 0245          | 0315      | 0346 | 1157          | 1228       | 1259 | 1324     | R0353    | 0907  | 14 32.6 | -20 55 | 96-  |
| 12      | 0220    | 0245          | 0316      | 0347 | 1155          | 1227       | 1257 | 1323     | R0455    | 0957  | 15 25.7 | -24 16 | 92-  |
| 13      | 0220    | 0246          | 0317      | 0348 | 1154          | 1225       | 1256 | 1322     | R0555    | 1048  | 16 19.7 | -26 25 | 86-  |
| 14      | 0221    | 0247          | 0318      | 0349 | 1152          | 1224       | 1255 | 1320     | R0651    | 1140  | 17 14.1 | -27 17 | 78-  |
| 15      | 0222    | 0248          | 0319      | 0350 | 1151          | 1223       | 1253 | 1319     | R0741    | 1231  | 18 07.8 | -26 52 | 70-  |
| 16      | 0223    | 0249          | 0319      | 0351 | 1149          | 1221       | 1252 | 1318     | R0825    | 1321  | 19 00.1 | -25 15 | 61-  |
| 17      | 0224    | 0250          | 0320      | 0352 | 1148          | 1220       | 1251 | 1317     | R0903    | 1408  | 19 50.5 | -22 34 | 52-  |
| 18      | 0224    | 0250          | 0321      | 0353 | 1146          | 1218       | 1249 | 1315     | R0936    | 1453  | 20 38.9 | -18 57 | 42-  |
| 19      | 0225    | 0251          | 0322      | 0354 | 1145          | 1217       | 1248 | 1314     | R1006    | 1537  | 21 25.5 | -14 34 | 33-  |
| 20      | 0226    | 0252          | 0323      | 0356 | 1143          | 1216       | 1247 | 1313     | R1034    | 1620  | 22 11.1 | -09 34 | 24-  |
| 21      | 0227    | 0253          | 0324      | 0357 | 1142          | 1214       | 1246 | 1312     | R1101    | 1703  | 22 56.4 | -04 07 | 16-  |
| 22      | 0227    | 0254          | 0325      | 0358 | 1140          | 1213       | 1244 | 1311     | R1128    | 1748  | 23 42.4 | +01 37 | 9-   |
| 23      | 0228    | 0255          | 0326      | 0359 | 1139          | 1212       | 1243 | 1309     | R1157    | 1834  | 00 30.0 | +07 24 | 4-   |
| 24      | 0229    | 0255          | 0327      | 0400 | 1138          | 1210       | 1242 | 1308     | R1229    | 1925  | 01 20.3 | +12 58 | 1-   |
| 25      | 0230    | 0256          | 0328      | 0401 | 1136          | 1209       | 1241 | 1307     | S0230    |       | 02 14.1 | +17 59 | 0+   |
| 26      | 0231    | 0257          | 0329      | 0402 | 1135          | 1208       | 1239 | 1306     | S0341    | 2019- | 03 11.9 | +22 02 | 2+   |
| 27      | 0231    | 0258          | 0330      | 0403 | 1133          | 1207       | 1238 | 1305     | S0452    | 2118- | 04 13.3 | +24 45 | 6+   |
| 28      | 0232    | 0259          | 0331      | 0404 | 1132          | 1205       | 1237 | 1304     | S0600    | 2221- | 05 17.0 | +25 47 | 13+  |
| 29      | 0233    | 0300          | 0332      | 0405 | 1130          | 1204       | 1236 | 1303     | S0700    | 2325- | 06 21.0 | +25 03 | 22+  |
| 30      | 0234    | 0301          | 0333      | 0406 | 1129          | 1203       | 1235 | 1302     | S0751    | 0026  | 07 22.9 | +22 36 | 32+  |

| Day UTC | Sun-set | Civ -twilight | Naut end- | Astr | Astr twilight | Naut begin | Civ  | Sun-rise | R/S      | trans | Moon RA | Dec    | Ph   |       |  |  |  |  |
|---------|---------|---------------|-----------|------|---------------|------------|------|----------|----------|-------|---------|--------|------|-------|--|--|--|--|
| *****   |         |               |           |      |               |            |      |          | MAY 2009 |       |         |        |      | ***** |  |  |  |  |
| 01      | 0235    | 0301          | 0334      | 0408 | 1128          | 1202       | 1234 | 1301     | S0834    | 0124  | 08 21.6 | +18 44 | 43+  |       |  |  |  |  |
| 02      | 0235    | 0302          | 0335      | 0409 | 1126          | 1200       | 1233 | 1300     | S0911    | 0218  | 09 16.6 | +13 48 | 55+  |       |  |  |  |  |
| 03      | 0236    | 0303          | 0336      | 0410 | 1125          | 1159       | 1232 | 1259     | S0943    | 0308  | 10 08.5 | +08 10 | 66+  |       |  |  |  |  |
| 04      | 0237    | 0304          | 0337      | 0411 | 1124          | 1158       | 1231 | 1258     | S1012    | 0355  | 10 58.1 | +02 11 | 76+  |       |  |  |  |  |
| 05      | 0238    | 0305          | 0338      | 0412 | 1122          | 1157       | 1230 | 1257     | S1040    | 0441  | 11 46.6 | -03 51 | 84+  |       |  |  |  |  |
| 06      | 0239    | 0306          | 0339      | 0413 | 1121          | 1156       | 1229 | 1256     | S1109    | 0526  | 12 35.0 | -09 40 | 91+  |       |  |  |  |  |
| 07      | 0239    | 0307          | 0339      | 0414 | 1120          | 1155       | 1228 | 1255     | S1139    | 0612  | 13 24.1 | -15 00 | 96+  |       |  |  |  |  |
| 08      | 0240    | 0307          | 0340      | 0415 | 1119          | 1154       | 1227 | 1254     | S1213    | 0700  | 14 14.7 | -19 37 | 99+  |       |  |  |  |  |
| 09      | 0241    | 0308          | 0341      | 0417 | 1117          | 1153       | 1226 | 1253     | S1251    | 0749  | 15 06.9 | -23 16 | 100- |       |  |  |  |  |
| 10      | 0242    | 0309          | 0342      | 0418 | 1116          | 1152       | 1225 | 1252     | R0344    | 0840  | 16 00.7 | -25 48 | 98-  |       |  |  |  |  |
| 11      | 0242    | 0310          | 0343      | 0419 | 1115          | 1151       | 1224 | 1251     | R0441    | 0932  | 16 55.3 | -27 05 | 95-  |       |  |  |  |  |
| 12      | 0243    | 0311          | 0344      | 0420 | 1114          | 1150       | 1223 | 1251     | R0533    | 1023  | 17 49.7 | -27 04 | 90-  |       |  |  |  |  |
| 13      | 0244    | 0312          | 0345      | 0421 | 1113          | 1149       | 1222 | 1250     | R0620    | 1114  | 18 42.9 | -25 48 | 84-  |       |  |  |  |  |
| 14      | 0245    | 0313          | 0346      | 0422 | 1112          | 1148       | 1221 | 1249     | R0700    | 1202  | 19 34.1 | -23 25 | 77-  |       |  |  |  |  |
| 15      | 0246    | 0313          | 0347      | 0423 | 1111          | 1147       | 1220 | 1248     | R0735    | 1248  | 20 23.1 | -20 05 | 68-  |       |  |  |  |  |
| 16      | 0246    | 0314          | 0348      | 0424 | 1110          | 1146       | 1220 | 1248     | R0806    | 1331  | 21 10.1 | -15 56 | 59-  |       |  |  |  |  |
| 17      | 0247    | 0315          | 0349      | 0425 | 1109          | 1145       | 1219 | 1247     | R0834    | 1414  | 21 55.6 | -11 11 | 49-  |       |  |  |  |  |
| 18      | 0248    | 0316          | 0350      | 0426 | 1107          | 1144       | 1218 | 1246     | R0901    | 1456  | 22 40.3 | -05 56 | 40-  |       |  |  |  |  |
| 19      | 0249    | 0317          | 0351      | 0428 | 1107          | 1143       | 1217 | 1246     | R0927    | 1539  | 23 25.4 | -00 23 | 30-  |       |  |  |  |  |
| 20      | 0249    | 0317          | 0352      | 0429 | 1106          | 1142       | 1217 | 1245     | R0955    | 1624  | 00 11.7 | +05 19 | 21-  |       |  |  |  |  |
| 21      | 0250    | 0318          | 0353      | 0430 | 1105          | 1142       | 1216 | 1244     | R1025    | 1712  | 01 00.5 | +10 54 | 13-  |       |  |  |  |  |
| 22      | 0251    | 0319          | 0354      | 0431 | 1104          | 1141       | 1215 | 1244     | R1059    | 1804  | 01 52.8 | +16 07 | 7-   |       |  |  |  |  |
| 23      | 0251    | 0320          | 0354      | 0432 | 1103          | 1140       | 1215 | 1243     | R1141    | 1902  | 02 49.3 | +20 33 | 2-   |       |  |  |  |  |
| 24      | 0252    | 0321          | 0355      | 0433 | 1102          | 1140       | 1214 | 1243     | R1231    |       | 03 50.3 | +23 47 | 0-   |       |  |  |  |  |
| 25      | 0253    | 0321          | 0356      | 0434 | 1101          | 1139       | 1214 | 1242     | S0341    | 2004- | 04 54.6 | +25 26 | 1+   |       |  |  |  |  |
| 26      | 0254    | 0322          | 0357      | 0435 | 1100          | 1138       | 1213 | 1242     | S0447    | 2109- | 06 00.2 | +25 15 | 5+   |       |  |  |  |  |
| 27      | 0254    | 0323          | 0358      | 0436 | 1100          | 1138       | 1213 | 1241     | S0544    | 2214- | 07 04.6 | +23 13 | 11+  |       |  |  |  |  |
| 28      | 0255    | 0324          | 0359      | 0437 | 1059          | 1137       | 1212 | 1241     | S0631    | 2316- | 08 05.7 | +19 37 | 20+  |       |  |  |  |  |
| 29      | 0256    | 0324          | 0359      | 0438 | 1058          | 1137       | 1212 | 1240     | S0711    | 0013  | 09 02.7 | +14 49 | 30+  |       |  |  |  |  |
| 30      | 0256    | 0325          | 0400      | 0439 | 1058          | 1136       | 1211 | 1240     | S0745    | 0105  | 09 55.9 | +09 16 | 40+  |       |  |  |  |  |
| 31      | 0257    | 0326          | 0401      | 0439 | 1057          | 1136       | 1211 | 1240     | S0815    | 0154  | 10 46.2 | +03 19 | 52+  |       |  |  |  |  |
| *****   |         |               |           |      |               |            |      |          | JUN 2009 |       |         |        |      | ***** |  |  |  |  |
| 01      | 0257    | 0326          | 0402      | 0440 | 1057          | 1135       | 1211 | 1239     | S0844    | 0240  | 11 34.7 | -02 41 | 62+  |       |  |  |  |  |
| 02      | 0258    | 0327          | 0403      | 0441 | 1056          | 1135       | 1210 | 1239     | S0912    | 0325  | 12 22.6 | -08 29 | 72+  |       |  |  |  |  |
| 03      | 0259    | 0328          | 0403      | 0442 | 1056          | 1134       | 1210 | 1239     | S0942    | 0410  | 13 10.8 | -13 51 | 81+  |       |  |  |  |  |
| 04      | 0259    | 0328          | 0404      | 0443 | 1055          | 1134       | 1210 | 1239     | S1014    | 0457  | 14 00.3 | -18 34 | 88+  |       |  |  |  |  |
| 05      | 0300    | 0329          | 0405      | 0444 | 1055          | 1134       | 1209 | 1239     | S1050    | 0545  | 14 51.4 | -22 26 | 94+  |       |  |  |  |  |
| 06      | 0300    | 0329          | 0405      | 0444 | 1054          | 1133       | 1209 | 1238     | S1130    | 0635  | 15 44.3 | -25 14 | 98+  |       |  |  |  |  |
| 07      | 0301    | 0330          | 0406      | 0445 | 1054          | 1133       | 1209 | 1238     | S1217    | 0726  | 16 38.4 | -26 50 | 100+ |       |  |  |  |  |
| 08      | 0301    | 0331          | 0406      | 0446 | 1054          | 1133       | 1209 | 1238     | R0327    | 0817  | 17 32.8 | -27 11 | 100- |       |  |  |  |  |
| 09      | 0302    | 0331          | 0407      | 0446 | 1053          | 1133       | 1209 | 1238     | R0416    | 0908  | 18 26.5 | -26 15 | 98-  |       |  |  |  |  |
| 10      | 0302    | 0332          | 0408      | 0447 | 1053          | 1133       | 1209 | 1238     | R0458    | 0957  | 19 18.5 | -24 10 | 94-  |       |  |  |  |  |
| 11      | 0303    | 0332          | 0408      | 0448 | 1053          | 1133       | 1209 | 1238     | R0534    | 1044  | 20 08.3 | -21 04 | 89-  |       |  |  |  |  |
| 12      | 0303    | 0332          | 0409      | 0448 | 1053          | 1132       | 1209 | 1238     | R0607    | 1128  | 20 55.9 | -17 07 | 82-  |       |  |  |  |  |
| 13      | 0304    | 0333          | 0409      | 0449 | 1053          | 1132       | 1209 | 1238     | R0635    | 1210  | 21 41.6 | -12 32 | 74-  |       |  |  |  |  |
| 14      | 0304    | 0333          | 0410      | 0449 | 1053          | 1132       | 1209 | 1238     | R0702    | 1252  | 22 26.2 | -07 27 | 65-  |       |  |  |  |  |
| 15      | 0304    | 0334          | 0410      | 0450 | 1053          | 1132       | 1209 | 1238     | R0728    | 1333  | 23 10.5 | -02 02 | 56-  |       |  |  |  |  |
| 16      | 0305    | 0334          | 0410      | 0450 | 1053          | 1132       | 1209 | 1238     | R0754    | 1416  | 23 55.5 | +03 31 | 45-  |       |  |  |  |  |
| 17      | 0305    | 0334          | 0411      | 0451 | 1053          | 1133       | 1209 | 1238     | R0822    | 1501  | 00 42.4 | +09 04 | 35-  |       |  |  |  |  |
| 18      | 0305    | 0335          | 0411      | 0451 | 1053          | 1133       | 1209 | 1238     | R0854    | 1550  | 01 32.3 | +14 19 | 25-  |       |  |  |  |  |
| 19      | 0306    | 0335          | 0411      | 0451 | 1053          | 1133       | 1209 | 1239     | R0931    | 1644  | 02 26.2 | +19 00 | 16-  |       |  |  |  |  |
| 20      | 0306    | 0335          | 0412      | 0451 | 1053          | 1133       | 1209 | 1239     | R1016    | 1743  | 03 24.9 | +22 42 | 9-   |       |  |  |  |  |
| 21      | 0306    | 0336          | 0412      | 0452 | 1053          | 1133       | 1209 | 1239     | R1111    | 1848  | 04 27.8 | +24 59 | 3-   |       |  |  |  |  |
| 22      | 0306    | 0336          | 0412      | 0452 | 1054          | 1133       | 1210 | 1239     | R1216    | 1954  | 05 33.6 | +25 31 | 0-   |       |  |  |  |  |
| 23      | 0306    | 0336          | 0412      | 0452 | 1054          | 1134       | 1210 | 1239     | S0329    | 1954- | 06 39.7 | +24 09 | 0+   |       |  |  |  |  |
| 24      | 0307    | 0336          | 0412      | 0452 | 1054          | 1134       | 1210 | 1240     | S0422    | 2059- | 07 43.6 | +21 00 | 3+   |       |  |  |  |  |
| 25      | 0307    | 0336          | 0412      | 0452 | 1055          | 1134       | 1211 | 1240     | S0506    | 2200- | 08 43.5 | +16 26 | 9+   |       |  |  |  |  |
| 26      | 0307    | 0336          | 0413      | 0452 | 1055          | 1135       | 1211 | 1240     | S0543    | 2256- | 09 39.4 | +10 55 | 17+  |       |  |  |  |  |
| 27      | 0307    | 0336          | 0413      | 0452 | 1055          | 1135       | 1211 | 1241     | S0616    | 2348- | 10 31.8 | +04 54 | 27+  |       |  |  |  |  |
| 28      | 0307    | 0336          | 0413      | 0452 | 1056          | 1136       | 1212 | 1241     | S0646    | 0036  | 11 21.6 | -01 14 | 37+  |       |  |  |  |  |
| 29      | 0307    | 0336          | 0413      | 0452 | 1056          | 1136       | 1212 | 1241     | S0715    | 0122  | 12 10.2 | -07 11 | 48+  |       |  |  |  |  |
| 30      | 0307    | 0336          | 0412      | 0452 | 1057          | 1136       | 1213 | 1242     | S0744    | 0208  | 12 58.6 | -12 42 | 59+  |       |  |  |  |  |

| Day UTC  | Sun-set | Civ -twilight | Naut end- | Astr | Astr twilight | Naut begin | Civ  | Sun-rise | R/S   | trans | Moon RA | Dec    | Ph   |
|----------|---------|---------------|-----------|------|---------------|------------|------|----------|-------|-------|---------|--------|------|
| *****    |         |               |           |      |               |            |      |          | ***** |       |         |        |      |
| JUL 2009 |         |               |           |      |               |            |      |          | ***** |       |         |        |      |
| 01       | 0307    | 0336          | 0412      | 0452 | 1057          | 1137       | 1213 | 1242     | S0815 | 0255  | 13 47.7 | -17 34 | 68+  |
| 02       | 0307    | 0336          | 0412      | 0452 | 1058          | 1137       | 1213 | 1243     | S0850 | 0342  | 14 38.1 | -21 37 | 77+  |
| 03       | 0307    | 0336          | 0412      | 0451 | 1059          | 1138       | 1214 | 1243     | S0929 | 0431  | 15 30.1 | -24 39 | 85+  |
| 04       | 0307    | 0336          | 0412      | 0451 | 1059          | 1139       | 1214 | 1244     | S1013 | 0522  | 16 23.5 | -26 33 | 91+  |
| 05       | 0307    | 0336          | 0412      | 0451 | 1100          | 1139       | 1215 | 1244     | S1103 | 0613  | 17 17.6 | -27 13 | 96+  |
| 06       | 0306    | 0336          | 0411      | 0451 | 1101          | 1140       | 1216 | 1245     | S1157 | 0704  | 18 11.3 | -26 37 | 99+  |
| 07       | 0306    | 0335          | 0411      | 0450 | 1101          | 1140       | 1216 | 1245     | R0257 | 0753  | 19 03.8 | -24 49 | 100+ |
| 08       | 0306    | 0335          | 0411      | 0450 | 1102          | 1141       | 1217 | 1246     | R0335 | 0841  | 19 54.3 | -21 58 | 99-  |
| 09       | 0306    | 0335          | 0410      | 0449 | 1103          | 1142       | 1217 | 1246     | R0409 | 0926  | 20 42.6 | -18 13 | 97-  |
| 10       | 0306    | 0334          | 0410      | 0449 | 1104          | 1142       | 1218 | 1247     | R0438 | 1009  | 21 29.0 | -13 45 | 92-  |
| 11       | 0305    | 0334          | 0410      | 0448 | 1105          | 1143       | 1219 | 1247     | R0505 | 1050  | 22 13.8 | -08 46 | 86-  |
| 12       | 0305    | 0334          | 0409      | 0448 | 1105          | 1144       | 1219 | 1248     | R0531 | 1131  | 22 58.0 | -03 26 | 79-  |
| 13       | 0305    | 0333          | 0409      | 0447 | 1106          | 1145       | 1220 | 1249     | R0557 | 1213  | 23 42.3 | +02 04 | 70-  |
| 14       | 0304    | 0333          | 0408      | 0446 | 1107          | 1145       | 1220 | 1249     | R0623 | 1256  | 00 27.9 | +07 34 | 61-  |
| 15       | 0304    | 0332          | 0408      | 0446 | 1108          | 1146       | 1221 | 1250     | R0652 | 1342  | 01 15.8 | +12 51 | 50-  |
| 16       | 0303    | 0332          | 0407      | 0445 | 1109          | 1147       | 1222 | 1250     | R0726 | 1432  | 02 07.2 | +17 38 | 40-  |
| 17       | 0303    | 0331          | 0406      | 0444 | 1110          | 1148       | 1223 | 1251     | R0806 | 1527  | 03 02.7 | +21 37 | 29-  |
| 18       | 0302    | 0331          | 0406      | 0443 | 1111          | 1149       | 1223 | 1252     | R0854 | 1627  | 04 02.8 | +24 25 | 19-  |
| 19       | 0302    | 0330          | 0405      | 0442 | 1112          | 1149       | 1224 | 1252     | R0953 | 1732  | 05 06.5 | +25 38 | 11-  |
| 20       | 0301    | 0330          | 0404      | 0442 | 1113          | 1150       | 1225 | 1253     | R1101 | 1837  | 06 12.1 | +25 03 | 5-   |
| 21       | 0301    | 0329          | 0404      | 0441 | 1114          | 1151       | 1226 | 1254     | R1216 | 1940  | 07 17.0 | +22 36 | 1-   |
| 22       | 0300    | 0328          | 0403      | 0440 | 1115          | 1152       | 1226 | 1254     | S0256 |       | 08 19.2 | +18 32 | 0+   |
| 23       | 0300    | 0328          | 0402      | 0439 | 1116          | 1153       | 1227 | 1255     | S0337 | 2040- | 09 17.6 | +13 15 | 2+   |
| 24       | 0259    | 0327          | 0401      | 0438 | 1117          | 1154       | 1228 | 1256     | S0413 | 2135- | 10 12.5 | +07 14 | 7+   |
| 25       | 0258    | 0326          | 0400      | 0437 | 1118          | 1154       | 1229 | 1257     | S0445 | 2227- | 11 04.5 | +00 56 | 14+  |
| 26       | 0258    | 0325          | 0359      | 0436 | 1119          | 1155       | 1229 | 1257     | S0515 | 2315- | 11 54.6 | -05 16 | 23+  |
| 27       | 0257    | 0325          | 0359      | 0435 | 1120          | 1156       | 1230 | 1258     | S0545 | 0003  | 12 44.1 | -11 04 | 33+  |
| 28       | 0256    | 0324          | 0358      | 0434 | 1121          | 1157       | 1231 | 1259     | S0616 | 0050  | 13 33.8 | -16 14 | 43+  |
| 29       | 0255    | 0323          | 0357      | 0433 | 1122          | 1158       | 1232 | 1259     | S0650 | 0138  | 14 24.3 | -20 34 | 54+  |
| 30       | 0254    | 0322          | 0356      | 0431 | 1123          | 1159       | 1233 | 1300     | S0728 | 0227  | 15 16.2 | -23 54 | 64+  |
| 31       | 0254    | 0321          | 0355      | 0430 | 1124          | 1200       | 1233 | 1301     | S0811 | 0318  | 16 09.2 | -26 06 | 73+  |
| *****    |         |               |           |      |               |            |      |          | ***** |       |         |        |      |
| AUG 2009 |         |               |           |      |               |            |      |          | ***** |       |         |        |      |
| 01       | 0253    | 0320          | 0354      | 0429 | 1125          | 1201       | 1234 | 1302     | S0859 | 0409  | 17 02.9 | -27 05 | 81+  |
| 02       | 0252    | 0319          | 0353      | 0428 | 1126          | 1202       | 1235 | 1302     | S0951 | 0500  | 17 56.6 | -26 49 | 88+  |
| 03       | 0251    | 0318          | 0352      | 0427 | 1128          | 1203       | 1236 | 1303     | S1047 | 0550  | 18 49.2 | -25 21 | 93+  |
| 04       | 0250    | 0317          | 0350      | 0425 | 1129          | 1204       | 1237 | 1304     | S1145 | 0638  | 19 40.2 | -22 47 | 97+  |
| 05       | 0249    | 0316          | 0349      | 0424 | 1130          | 1204       | 1237 | 1305     | S1243 | 0724  | 20 29.2 | -19 15 | 100+ |
| 06       | 0248    | 0315          | 0348      | 0423 | 1131          | 1205       | 1238 | 1305     | R0242 | 0808  | 21 16.2 | -14 57 | 100- |
| 07       | 0247    | 0314          | 0347      | 0422 | 1132          | 1206       | 1239 | 1306     | R0310 | 0850  | 22 01.7 | -10 03 | 98-  |
| 08       | 0246    | 0313          | 0346      | 0420 | 1133          | 1207       | 1240 | 1307     | R0336 | 0931  | 22 46.3 | -04 46 | 95-  |
| 09       | 0245    | 0312          | 0345      | 0419 | 1134          | 1208       | 1241 | 1308     | R0401 | 1012  | 23 30.8 | +00 45 | 90-  |
| 10       | 0244    | 0311          | 0344      | 0418 | 1135          | 1209       | 1241 | 1308     | R0427 | 1055  | 00 16.0 | +06 16 | 83-  |
| 11       | 0243    | 0310          | 0342      | 0416 | 1136          | 1210       | 1242 | 1309     | R0455 | 1139  | 01 03.1 | +11 36 | 75-  |
| 12       | 0242    | 0309          | 0341      | 0415 | 1137          | 1211       | 1243 | 1310     | R0527 | 1227  | 01 52.9 | +16 30 | 65-  |
| 13       | 0241    | 0308          | 0340      | 0413 | 1138          | 1212       | 1244 | 1310     | R0603 | 1318  | 02 46.3 | +20 40 | 54-  |
| 14       | 0240    | 0307          | 0339      | 0412 | 1139          | 1213       | 1245 | 1311     | R0646 | 1415  | 03 43.6 | +23 47 | 43-  |
| 15       | 0239    | 0305          | 0337      | 0411 | 1140          | 1214       | 1245 | 1312     | R0739 | 1515  | 04 44.7 | +25 31 | 32-  |
| 16       | 0238    | 0304          | 0336      | 0409 | 1141          | 1214       | 1246 | 1313     | R0841 | 1618  | 05 48.1 | +25 36 | 22-  |
| 17       | 0237    | 0303          | 0335      | 0408 | 1142          | 1215       | 1247 | 1313     | R0951 | 1721  | 06 52.0 | +23 53 | 13-  |
| 18       | 0235    | 0302          | 0333      | 0406 | 1143          | 1216       | 1248 | 1314     | R1105 | 1822  | 07 54.3 | +20 30 | 6-   |
| 19       | 0234    | 0301          | 0332      | 0405 | 1144          | 1217       | 1249 | 1315     | R1220 | 1919  | 08 53.8 | +15 43 | 2-   |
| 20       | 0233    | 0259          | 0331      | 0403 | 1145          | 1218       | 1249 | 1316     | R1334 |       | 09 50.1 | +09 58 | 0-   |
| 21       | 0232    | 0258          | 0329      | 0402 | 1146          | 1219       | 1250 | 1316     | S0240 | 2012- | 10 43.6 | +03 42 | 1+   |
| 22       | 0231    | 0257          | 0328      | 0400 | 1147          | 1220       | 1251 | 1317     | S0312 | 2103- | 11 35.3 | -02 41 | 5+   |
| 23       | 0229    | 0255          | 0327      | 0359 | 1148          | 1221       | 1252 | 1318     | S0343 | 2152- | 12 26.0 | -08 47 | 11+  |
| 24       | 0228    | 0254          | 0325      | 0357 | 1149          | 1222       | 1252 | 1319     | S0415 | 2241- | 13 16.6 | -14 19 | 19+  |
| 25       | 0227    | 0253          | 0324      | 0356 | 1150          | 1222       | 1253 | 1319     | S0448 | 2330- | 14 07.9 | -19 02 | 28+  |
| 26       | 0226    | 0252          | 0322      | 0354 | 1151          | 1223       | 1254 | 1320     | S0526 | 0020  | 15 00.2 | -22 45 | 38+  |
| 27       | 0224    | 0250          | 0321      | 0353 | 1152          | 1224       | 1255 | 1321     | S0607 | 0112  | 15 53.4 | -25 20 | 48+  |
| 28       | 0223    | 0249          | 0319      | 0351 | 1153          | 1225       | 1256 | 1321     | S0654 | 0203  | 16 47.3 | -26 42 | 58+  |
| 29       | 0222    | 0247          | 0318      | 0350 | 1154          | 1226       | 1256 | 1322     | S0745 | 0255  | 17 41.0 | -26 48 | 67+  |
| 30       | 0220    | 0246          | 0317      | 0348 | 1155          | 1227       | 1257 | 1323     | S0840 | 0345  | 18 33.9 | -25 42 | 75+  |
| 31       | 0219    | 0245          | 0315      | 0346 | 1156          | 1227       | 1258 | 1324     | S0937 | 0434  | 19 25.1 | -23 27 | 83+  |

| Day UTC | Sun-set | Civ -twilight | Naut end- | Astr | Astr twilight | Naut begin | Civ  | Sun-rise | R/S      | trans | Moon |      |        |      |
|---------|---------|---------------|-----------|------|---------------|------------|------|----------|----------|-------|------|------|--------|------|
|         |         |               |           |      |               |            |      |          |          |       | RA   | Dec  | Ph     |      |
| *****   |         |               |           |      |               |            |      |          | SEP 2009 |       |      |      |        |      |
| 01      | 0218    | 0243          | 0314      | 0345 | 1157          | 1228       | 1259 | 1324     | S1035    | 0521  | 20   | 14.6 | -20 13 | 90+  |
| 02      | 0216    | 0242          | 0312      | 0343 | 1158          | 1229       | 1259 | 1325     | S1133    | 0605  | 21   | 02.1 | -16 09 | 95+  |
| 03      | 0215    | 0241          | 0311      | 0342 | 1159          | 1230       | 1300 | 1326     | S1230    | 0648  | 21   | 48.2 | -11 25 | 98+  |
| 04      | 0214    | 0239          | 0309      | 0340 | 1200          | 1231       | 1301 | 1326     | S1328    | 0730  | 22   | 33.3 | -06 13 | 100+ |
| 05      | 0212    | 0238          | 0308      | 0339 | 1201          | 1231       | 1302 | 1327     | R0206    | 0812  | 23   | 18.3 | -00 42 | 99-  |
| 06      | 0211    | 0236          | 0306      | 0337 | 1202          | 1232       | 1302 | 1328     | R0232    | 0854  | 00   | 03.8 | +04 53 | 97-  |
| 07      | 0210    | 0235          | 0305      | 0336 | 1202          | 1233       | 1303 | 1328     | R0300    | 0938  | 00   | 51.0 | +10 20 | 93-  |
| 08      | 0208    | 0234          | 0303      | 0334 | 1203          | 1234       | 1304 | 1329     | R0330    | 1025  | 01   | 40.5 | +15 24 | 86-  |
| 09      | 0207    | 0232          | 0302      | 0332 | 1204          | 1235       | 1304 | 1330     | R0405    | 1115  | 02   | 33.1 | +19 46 | 78-  |
| 10      | 0205    | 0231          | 0300      | 0331 | 1205          | 1235       | 1305 | 1331     | R0445    | 1209  | 03   | 29.3 | +23 09 | 69-  |
| 11      | 0204    | 0229          | 0259      | 0329 | 1206          | 1236       | 1306 | 1331     | R0534    | 1307  | 04   | 28.8 | +25 14 | 58-  |
| 12      | 0203    | 0228          | 0257      | 0328 | 1207          | 1237       | 1307 | 1332     | R0631    | 1408  | 05   | 30.5 | +25 46 | 47-  |
| 13      | 0201    | 0226          | 0256      | 0326 | 1208          | 1238       | 1307 | 1333     | R0736    | 1509  | 06   | 32.9 | +24 37 | 35-  |
| 14      | 0200    | 0225          | 0255      | 0325 | 1208          | 1239       | 1308 | 1333     | R0846    | 1608  | 07   | 34.2 | +21 50 | 25-  |
| 15      | 0158    | 0224          | 0253      | 0323 | 1209          | 1239       | 1309 | 1334     | R0959    | 1705  | 08   | 33.1 | +17 38 | 15-  |
| 16      | 0157    | 0222          | 0252      | 0321 | 1210          | 1240       | 1310 | 1335     | R1111    | 1759  | 09   | 29.3 | +12 20 | 8-   |
| 17      | 0156    | 0221          | 0250      | 0320 | 1211          | 1241       | 1310 | 1335     | R1222    | 1850  | 10   | 23.0 | +06 21 | 3-   |
| 18      | 0154    | 0219          | 0249      | 0318 | 1212          | 1242       | 1311 | 1336     | R1331    | 1940  | 11   | 14.9 | +00 03 | 0-   |
| 19      | 0153    | 0218          | 0247      | 0317 | 1213          | 1242       | 1312 | 1337     | S0140    |       | 12   | 06.0 | -06 10 | 1+   |
| 20      | 0151    | 0216          | 0246      | 0315 | 1213          | 1243       | 1312 | 1338     | S0211    | 2029- | 12   | 57.1 | -11 58 | 3+   |
| 21      | 0150    | 0215          | 0244      | 0314 | 1214          | 1244       | 1313 | 1338     | S0245    | 2119- | 13   | 48.8 | -17 04 | 8+   |
| 22      | 0148    | 0213          | 0243      | 0312 | 1215          | 1245       | 1314 | 1339     | S0321    | 2210- | 14   | 41.5 | -21 13 | 15+  |
| 23      | 0147    | 0212          | 0241      | 0311 | 1216          | 1245       | 1315 | 1340     | S0402    | 2301- | 15   | 35.3 | -24 15 | 23+  |
| 24      | 0146    | 0211          | 0240      | 0309 | 1217          | 1246       | 1315 | 1340     | S0447    | 2354- | 16   | 29.6 | -26 02 | 32+  |
| 25      | 0144    | 0209          | 0238      | 0308 | 1217          | 1247       | 1316 | 1341     | S0537    | 0047  | 17   | 23.8 | -26 33 | 41+  |
| 26      | 0143    | 0208          | 0237      | 0306 | 1218          | 1248       | 1317 | 1342     | S0632    | 0138  | 18   | 17.1 | -25 49 | 51+  |
| 27      | 0141    | 0206          | 0236      | 0305 | 1219          | 1248       | 1318 | 1343     | S0728    | 0228  | 19   | 08.8 | -23 57 | 60+  |
| 28      | 0140    | 0205          | 0234      | 0303 | 1220          | 1249       | 1318 | 1343     | S0826    | 0315  | 19   | 58.5 | -21 03 | 69+  |
| 29      | 0139    | 0204          | 0233      | 0302 | 1221          | 1250       | 1319 | 1344     | S0923    | 0401  | 20   | 46.3 | -17 17 | 77+  |
| 30      | 0137    | 0202          | 0231      | 0301 | 1221          | 1251       | 1320 | 1345     | S1021    | 0444  | 21   | 32.6 | -12 48 | 85+  |
| *****   |         |               |           |      |               |            |      |          | OCT 2009 |       |      |      |        |      |
| 01      | 0136    | 0201          | 0230      | 0259 | 1222          | 1251       | 1320 | 1346     | S1118    | 0526  | 22   | 17.9 | -07 47 | 91+  |
| 02      | 0134    | 0159          | 0229      | 0258 | 1223          | 1252       | 1321 | 1346     | S1216    | 0608  | 23   | 03.0 | -02 23 | 96+  |
| 03      | 0133    | 0158          | 0227      | 0256 | 1224          | 1253       | 1322 | 1347     | S1315    | 0650  | 23   | 48.8 | +03 13 | 99+  |
| 04      | 0132    | 0157          | 0226      | 0255 | 1224          | 1254       | 1323 | 1348     | S1416    | 0734  | 00   | 36.0 | +08 46 | 100+ |
| 05      | 0130    | 0155          | 0224      | 0254 | 1225          | 1254       | 1323 | 1349     | R0132    | 0821  | 01   | 25.7 | +14 02 | 99-  |
| 06      | 0129    | 0154          | 0223      | 0252 | 1226          | 1255       | 1324 | 1349     | R0206    | 0911  | 02   | 18.5 | +18 41 | 95-  |
| 07      | 0128    | 0153          | 0222      | 0251 | 1227          | 1256       | 1325 | 1350     | R0245    | 1005  | 03   | 14.9 | +22 23 | 89-  |
| 08      | 0126    | 0151          | 0220      | 0250 | 1227          | 1257       | 1326 | 1351     | R0332    | 1102  | 04   | 14.5 | +24 49 | 81-  |
| 09      | 0125    | 0150          | 0219      | 0248 | 1228          | 1257       | 1326 | 1352     | R0427    | 1202  | 05   | 16.2 | +25 43 | 72-  |
| 10      | 0124    | 0149          | 0218      | 0247 | 1229          | 1258       | 1327 | 1352     | R0529    | 1303  | 06   | 18.5 | +24 57 | 61-  |
| 11      | 0122    | 0147          | 0217      | 0246 | 1230          | 1259       | 1328 | 1353     | R0637    | 1401  | 07   | 19.5 | +22 34 | 50-  |
| 12      | 0121    | 0146          | 0215      | 0244 | 1230          | 1300       | 1329 | 1354     | R0747    | 1457  | 08   | 18.0 | +18 47 | 38-  |
| 13      | 0120    | 0145          | 0214      | 0243 | 1231          | 1300       | 1330 | 1355     | R0857    | 1551  | 09   | 13.6 | +13 54 | 28-  |
| 14      | 0118    | 0144          | 0213      | 0242 | 1232          | 1301       | 1330 | 1356     | R1006    | 1641  | 10   | 06.7 | +08 16 | 18-  |
| 15      | 0117    | 0142          | 0212      | 0241 | 1233          | 1302       | 1331 | 1356     | R1113    | 1730  | 10   | 57.9 | +02 13 | 10-  |
| 16      | 0116    | 0141          | 0210      | 0239 | 1234          | 1303       | 1332 | 1357     | R1220    | 1819  | 11   | 48.3 | -03 54 | 5-   |
| 17      | 0115    | 0140          | 0209      | 0238 | 1234          | 1303       | 1333 | 1358     | R1327    | 1907  | 12   | 38.6 | -09 46 | 1-   |
| 18      | 0113    | 0139          | 0208      | 0237 | 1235          | 1304       | 1333 | 1359     | R1433    |       | 13   | 29.8 | -15 04 | 0-   |
| 19      | 0112    | 0138          | 0207      | 0236 | 1236          | 1305       | 1334 | 1400     | S0116    | 1958- | 14   | 22.2 | -19 33 | 2+   |
| 20      | 0111    | 0136          | 0206      | 0235 | 1237          | 1306       | 1335 | 1401     | S0155    | 2049- | 15   | 15.9 | -22 59 | 5+   |
| 21      | 0110    | 0135          | 0205      | 0234 | 1237          | 1307       | 1336 | 1401     | S0239    | 2142- | 16   | 10.5 | -25 12 | 10+  |
| 22      | 0109    | 0134          | 0204      | 0233 | 1238          | 1307       | 1337 | 1402     | S0328    | 2236- | 17   | 05.3 | -26 09 | 17+  |
| 23      | 0108    | 0133          | 0202      | 0232 | 1239          | 1308       | 1338 | 1403     | S0421    | 2329- | 17   | 59.2 | -25 49 | 25+  |
| 24      | 0106    | 0132          | 0201      | 0231 | 1240          | 1309       | 1338 | 1404     | S0517    | 0020  | 18   | 51.6 | -24 18 | 34+  |
| 25      | 0105    | 0131          | 0200      | 0229 | 1241          | 1310       | 1339 | 1405     | S0615    | 0108  | 19   | 41.8 | -21 44 | 43+  |
| 26      | 0104    | 0130          | 0159      | 0228 | 1241          | 1311       | 1340 | 1406     | S0712    | 0154  | 20   | 29.8 | -18 17 | 52+  |
| 27      | 0103    | 0129          | 0158      | 0228 | 1242          | 1311       | 1341 | 1407     | S0809    | 0238  | 21   | 16.1 | -14 06 | 61+  |
| 28      | 0102    | 0128          | 0157      | 0227 | 1243          | 1312       | 1342 | 1408     | S0906    | 0320  | 22   | 01.1 | -09 20 | 70+  |
| 29      | 0101    | 0127          | 0156      | 0226 | 1244          | 1313       | 1343 | 1408     | S1003    | 0402  | 22   | 45.7 | -04 08 | 79+  |
| 30      | 0100    | 0126          | 0155      | 0225 | 1244          | 1314       | 1343 | 1409     | S1101    | 0444  | 23   | 30.8 | +01 19 | 86+  |
| 31      | 0059    | 0125          | 0155      | 0224 | 1245          | 1315       | 1344 | 1410     | S1201    | 0527  | 00   | 17.4 | +06 52 | 93+  |

| Day UTC | Sun-set | Civ -twilight | Naut end- | Astr | Astr twilight | Naut begin | Civ  | Sun-rise | R/S      | trans | Moon RA | Dec    | Ph   |
|---------|---------|---------------|-----------|------|---------------|------------|------|----------|----------|-------|---------|--------|------|
| *****   |         |               |           |      |               |            |      |          | NOV 2009 |       |         |        |      |
| 01      | 0058    | 0124          | 0154      | 0223 | 1246          | 1315       | 1345 | 1411     | S1304    | 0613  | 01 06.5 | +12 15 | 97+  |
| 02      | 0057    | 0123          | 0153      | 0222 | 1247          | 1316       | 1346 | 1412     | S1410    | 0702  | 01 58.9 | +17 10 | 100+ |
| 03      | 0056    | 0122          | 0152      | 0221 | 1248          | 1317       | 1347 | 1413     | R0041    | 0756  | 02 55.2 | +21 17 | 100- |
| 04      | 0055    | 0121          | 0151      | 0220 | 1248          | 1318       | 1348 | 1414     | R0126    | 0853  | 03 55.4 | +24 11 | 97-  |
| 05      | 0054    | 0120          | 0150      | 0220 | 1249          | 1319       | 1349 | 1415     | R0220    | 0954  | 04 58.4 | +25 33 | 92-  |
| 06      | 0053    | 0120          | 0150      | 0219 | 1250          | 1320       | 1350 | 1416     | R0322    | 1056  | 06 02.4 | +25 12 | 84-  |
| 07      | 0053    | 0119          | 0149      | 0218 | 1251          | 1320       | 1350 | 1417     | R0429    | 1156  | 07 05.0 | +23 09 | 75-  |
| 08      | 0052    | 0118          | 0148      | 0218 | 1252          | 1321       | 1351 | 1418     | R0539    | 1254  | 08 04.9 | +19 37 | 64-  |
| 09      | 0051    | 0117          | 0147      | 0217 | 1253          | 1322       | 1352 | 1419     | R0649    | 1347  | 09 01.3 | +14 56 | 53-  |
| 10      | 0050    | 0117          | 0147      | 0216 | 1253          | 1323       | 1353 | 1420     | R0757    | 1438  | 09 54.6 | +09 29 | 42-  |
| 11      | 0049    | 0116          | 0146      | 0216 | 1254          | 1324       | 1354 | 1420     | R0904    | 1526  | 10 45.5 | +03 36 | 31-  |
| 12      | 0049    | 0115          | 0145      | 0215 | 1255          | 1325       | 1355 | 1421     | R1009    | 1613  | 11 35.1 | -02 23 | 21-  |
| 13      | 0048    | 0115          | 0145      | 0215 | 1256          | 1326       | 1356 | 1422     | R1114    | 1701  | 12 24.5 | -08 11 | 13-  |
| 14      | 0047    | 0114          | 0144      | 0214 | 1257          | 1326       | 1357 | 1423     | R1219    | 1749  | 13 14.4 | -13 32 | 7-   |
| 15      | 0047    | 0113          | 0144      | 0214 | 1257          | 1327       | 1358 | 1424     | R1324    | 1840  | 14 05.7 | -18 10 | 2-   |
| 16      | 0046    | 0113          | 0143      | 0213 | 1258          | 1328       | 1358 | 1425     | R1428    | 1932  | 14 58.5 | -21 52 | 0-   |
| 17      | 0046    | 0112          | 0143      | 0213 | 1259          | 1329       | 1359 | 1426     | S0032    |       | 15 52.6 | -24 26 | 0+   |
| 18      | 0045    | 0112          | 0142      | 0212 | 1300          | 1330       | 1400 | 1427     | S0119    | 2025- | 16 47.3 | -25 45 | 2+   |
| 19      | 0045    | 0111          | 0142      | 0212 | 1301          | 1331       | 1401 | 1428     | S0211    | 2118- | 17 41.7 | -25 48 | 6+   |
| 20      | 0044    | 0111          | 0142      | 0211 | 1302          | 1332       | 1402 | 1429     | S0307    | 2210- | 18 34.7 | -24 37 | 12+  |
| 21      | 0044    | 0111          | 0141      | 0211 | 1302          | 1332       | 1403 | 1430     | S0404    | 2300- | 19 25.5 | -22 21 | 18+  |
| 22      | 0043    | 0110          | 0141      | 0211 | 1303          | 1333       | 1404 | 1431     | S0502    | 2348- | 20 14.1 | -19 10 | 26+  |
| 23      | 0043    | 0110          | 0141      | 0211 | 1304          | 1334       | 1405 | 1432     | S0559    | 0032  | 21 00.4 | -15 15 | 35+  |
| 24      | 0042    | 0110          | 0140      | 0210 | 1305          | 1335       | 1406 | 1433     | S0655    | 0115  | 21 45.2 | -10 44 | 44+  |
| 25      | 0042    | 0109          | 0140      | 0210 | 1306          | 1336       | 1407 | 1434     | S0751    | 0156  | 22 29.0 | -05 47 | 53+  |
| 26      | 0042    | 0109          | 0140      | 0210 | 1306          | 1337       | 1407 | 1435     | S0847    | 0237  | 23 13.0 | -00 32 | 63+  |
| 27      | 0041    | 0109          | 0140      | 0210 | 1307          | 1337       | 1408 | 1436     | S0945    | 0319  | 23 57.9 | +04 52 | 72+  |
| 28      | 0041    | 0109          | 0139      | 0210 | 1308          | 1338       | 1409 | 1437     | S1046    | 0403  | 00 45.1 | +10 13 | 81+  |
| 29      | 0041    | 0108          | 0139      | 0210 | 1309          | 1339       | 1410 | 1437     | S1150    | 0450  | 01 35.5 | +15 17 | 88+  |
| 30      | 0041    | 0108          | 0139      | 0209 | 1309          | 1340       | 1411 | 1438     | S1257    | 0541  | 02 30.0 | +19 44 | 95+  |
| *****   |         |               |           |      |               |            |      |          | DEC 2009 |       |         |        |      |
| 01      | 0041    | 0108          | 0139      | 0209 | 1310          | 1341       | 1412 | 1439     | S1406    | 0637  | 03 29.2 | +23 11 | 99+  |
| 02      | 0041    | 0108          | 0139      | 0209 | 1311          | 1341       | 1412 | 1440     | S1513    | 0738  | 04 32.5 | +25 13 | 100+ |
| 03      | 0040    | 0108          | 0139      | 0209 | 1312          | 1342       | 1413 | 1441     | R0106    | 0842  | 05 38.1 | +25 30 | 98-  |
| 04      | 0040    | 0108          | 0139      | 0209 | 1313          | 1343       | 1414 | 1442     | R0214    | 0945  | 06 43.6 | +23 57 | 94-  |
| 05      | 0040    | 0108          | 0139      | 0210 | 1313          | 1344       | 1415 | 1443     | R0326    | 1045  | 07 46.7 | +20 43 | 87-  |
| 06      | 0040    | 0108          | 0139      | 0210 | 1314          | 1344       | 1416 | 1443     | R0438    | 1142  | 08 46.1 | +16 09 | 78-  |
| 07      | 0040    | 0108          | 0139      | 0210 | 1315          | 1345       | 1416 | 1444     | R0549    | 1235  | 09 41.6 | +10 42 | 68-  |
| 08      | 0040    | 0108          | 0139      | 0210 | 1315          | 1346       | 1417 | 1445     | R0657    | 1324  | 10 34.0 | +04 47 | 57-  |
| 09      | 0041    | 0108          | 0140      | 0210 | 1316          | 1347       | 1418 | 1446     | R0803    | 1412  | 11 24.2 | -01 15 | 46-  |
| 10      | 0041    | 0108          | 0140      | 0210 | 1317          | 1347       | 1419 | 1446     | R0907    | 1458  | 12 13.5 | -07 05 | 35-  |
| 11      | 0041    | 0109          | 0140      | 0211 | 1317          | 1348       | 1419 | 1447     | R1011    | 1546  | 13 03.0 | -12 29 | 25-  |
| 12      | 0041    | 0109          | 0140      | 0211 | 1318          | 1349       | 1420 | 1448     | R1115    | 1635  | 13 53.3 | -17 14 | 17-  |
| 13      | 0041    | 0109          | 0141      | 0211 | 1319          | 1349       | 1421 | 1449     | R1218    | 1725  | 14 45.0 | -21 05 | 10-  |
| 14      | 0042    | 0109          | 0141      | 0211 | 1319          | 1350       | 1421 | 1449     | R1319    | 1817  | 15 38.2 | -23 53 | 5-   |
| 15      | 0042    | 0110          | 0141      | 0212 | 1320          | 1351       | 1422 | 1450     | R1417    | 1910  | 16 32.3 | -25 30 | 1-   |
| 16      | 0042    | 0110          | 0141      | 0212 | 1321          | 1351       | 1423 | 1451     | R1510    |       | 17 26.4 | -25 52 | 0-   |
| 17      | 0043    | 0110          | 0142      | 0213 | 1321          | 1352       | 1423 | 1451     | S0057    | 2003- | 18 19.6 | -25 00 | 1+   |
| 18      | 0043    | 0111          | 0142      | 0213 | 1322          | 1352       | 1424 | 1452     | S0154    | 2054- | 19 11.0 | -23 00 | 3+   |
| 19      | 0043    | 0111          | 0143      | 0213 | 1322          | 1353       | 1424 | 1452     | S0252    | 2142- | 20 00.1 | -20 03 | 7+   |
| 20      | 0044    | 0112          | 0143      | 0214 | 1323          | 1353       | 1425 | 1453     | S0349    | 2227- | 20 46.9 | -16 19 | 12+  |
| 21      | 0044    | 0112          | 0144      | 0214 | 1323          | 1354       | 1425 | 1453     | S0446    | 2311- | 21 31.7 | -11 59 | 19+  |
| 22      | 0045    | 0113          | 0144      | 0215 | 1324          | 1354       | 1426 | 1454     | S0541    | 2352- | 22 15.2 | -07 12 | 27+  |
| 23      | 0045    | 0113          | 0145      | 0215 | 1324          | 1355       | 1426 | 1454     | S0637    | 0032  | 22 58.2 | -02 08 | 36+  |
| 24      | 0046    | 0114          | 0145      | 0216 | 1325          | 1355       | 1427 | 1455     | S0733    | 0113  | 23 41.6 | +03 06 | 45+  |
| 25      | 0046    | 0114          | 0146      | 0216 | 1325          | 1356       | 1427 | 1455     | S0831    | 0155  | 00 26.6 | +08 20 | 55+  |
| 26      | 0047    | 0115          | 0146      | 0217 | 1326          | 1356       | 1428 | 1456     | S0931    | 0239  | 01 14.1 | +13 22 | 65+  |
| 27      | 0048    | 0115          | 0147      | 0218 | 1326          | 1357       | 1428 | 1456     | S1035    | 0327  | 02 05.3 | +17 58 | 75+  |
| 28      | 0048    | 0116          | 0148      | 0218 | 1326          | 1357       | 1428 | 1456     | S1142    | 0420  | 03 01.1 | +21 48 | 84+  |
| 29      | 0049    | 0117          | 0148      | 0219 | 1327          | 1357       | 1429 | 1457     | S1250    | 0517  | 04 01.7 | +24 29 | 91+  |
| 30      | 0050    | 0117          | 0149      | 0219 | 1327          | 1358       | 1429 | 1457     | S1355    | 0620  | 05 06.3 | +25 36 | 97+  |
| 31      | 0050    | 0118          | 0149      | 0220 | 1327          | 1358       | 1429 | 1457     | S1455    | 0724  | 06 12.9 | +24 52 | 100+ |