



Astrodienst Ephemeris Tables for the year 2051

tropical geocentric zodiac

contains Sun, Moon, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto, True Node, Moon's Node, Lilith, Chiron

Programming
Dieter Koch and Alois Treindl
based on Swiss Ephemeris
Code D5EPH

ASTRODIENST EPHEMERIS for the year 2051

geocentric

JANUARY 2051

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|---------|----------|----------|----------|----------|----------|---------|----------|----------|----------|---------|---------|---------|----------|----------|------|
| S 1 | 6 42 26 | 10°39'51 | 24°48'48 | 18°57'7 | 23°43'43 | 5°28'28 | 5°41'41 | 7°47'47 | 25°33'33 | 25°54'54 | 8°48'48 | 9°38'38 | 8°39'39 | 28°38'38 | 18°57'5 | S 1 |
| M 2 | 6 46 23 | 11°30'59 | 6°15'57 | 19°12'12 | 24°46'46 | 6°7'7 | 5°15'39 | 7°54'54 | 25°33'33 | 25°53'53 | 8°49'49 | 9°30'30 | 8°36'36 | 28°45'45 | 18°12'12 | M 2 |
| T 3 | 6 50 19 | 12°32'07 | 18°54'54 | 20°20'20 | 25°49'49 | 6°45'45 | 5°37'37 | 8°1'1 | 25°32'32 | 25°52'52 | 8°50'50 | 9°25'25 | 8°33'33 | 28°52'52 | 18°19'19 | T 3 |
| W 4 | 6 54 16 | 13°33'16 | 0°44'44 | 21°30'30 | 26°53'53 | 7°23'23 | 5°34'34 | 8°7'7 | 25°32'32 | 25°51'51 | 8°51'51 | 9°21'21 | 8°30'30 | 28°58'58 | 18°26'26 | W 4 |
| T 5 | 6 58 12 | 14°34'25 | 12°33'33 | 22°42'42 | 27°57'57 | 8°2'2 | 5°32'32 | 8°14'14 | 25°32'32 | 25°50'50 | 8°52'52 | 9°20'20 | 8°26'26 | 29°5'5 | 18°33'33 | T 5 |
| F 6 | 7 2 9 | 15°35'35 | 24°26'26 | 23°56'56 | 29°1'1 | 8°40'40 | 5°29'29 | 8°21'21 | 25°32'32 | 25°49'49 | 8°53'53 | 9°21'21 | 8°23'23 | 29°12'12 | 18°39'39 | F 6 |
| S 7 | 7 6 6 | 16°36'44 | 6°11'27 | 25°12'12 | 0°57'6 | 9°19'19 | 5°26'26 | 8°28'28 | 25°31'31 | 25°48'48 | 8°55'55 | 9°21'21 | 8°20'20 | 29°18'18 | 18°46'46 | S 7 |
| S 8 | 7 10 2 | 17°37'54 | 18°43'43 | 26°30'30 | 1°11'11 | 9°58'58 | 5°23'23 | 8°34'34 | 25°31'31 | 25°47'47 | 8°56'56 | 9°21'21 | 8°17'17 | 29°25'25 | 18°52'52 | S 8 |
| M 9 | 7 13 59 | 18°39'04 | 1°18'18 | 27°48'48 | 2°16'16 | 10°36'36 | 5°19'19 | 8°41'41 | 25°30'30 | 25°46'46 | 8°57'57 | 9°19'19 | 8°14'14 | 29°32'32 | 18°59'59 | M 9 |
| T 10 | 7 17 55 | 19°40'14 | 14°15'15 | 29°9'9 | 3°21'21 | 11°15'15 | 5°15'15 | 8°48'48 | 25°30'30 | 25°45'45 | 8°58'58 | 9°14'14 | 8°11'11 | 29°38'38 | 19°6'6 | T 10 |
| W 11 | 7 21 52 | 20°41'24 | 27°37'37 | 0°30'30 | 4°27'27 | 11°54'54 | 5°12'12 | 8°55'55 | 25°29'29 | 25°44'44 | 8°59'59 | 9°6'6 | 8°7'7 | 29°45'45 | 19°12'12 | W 11 |
| T 12 | 7 25 48 | 21°42'34 | 11°33'33 | 1°52'52 | 5°33'33 | 12°33'33 | 5°8'8 | 9°2'2 | 25°29'29 | 25°43'43 | 9°0'0 | 8°56'56 | 8°4'4 | 29°52'52 | 19°19'19 | T 12 |
| F 13 | 7 29 45 | 22°43'43 | 25°30'30 | 3°15'15 | 6°39'39 | 13°11'11 | 5°4'4 | 9°9'9 | 25°28'28 | 25°43'43 | 9°2'2 | 8°45'45 | 8°1'1 | 29°58'58 | 19°25'25 | F 13 |
| S 14 | 7 33 42 | 23°44'52 | 9°53'53 | 4°40'40 | 7°45'45 | 13°50'50 | 4°59'59 | 9°16'16 | 25°27'27 | 25°42'42 | 9°3'3 | 8°32'32 | 7°58'58 | 0°5'5 | 19°31'31 | S 14 |
| S 15 | 7 37 38 | 24°46'01 | 24°25'25 | 6°5'5 | 8°52'52 | 14°29'29 | 4°55'55 | 9°23'23 | 25°26'26 | 25°41'41 | 9°4'4 | 8°21'21 | 7°55'55 | 0°12'12 | 19°38'38 | S 15 |
| M 16 | 7 41 35 | 25°47'09 | 8°59'59 | 7°31'31 | 9°59'59 | 15°8'8 | 4°50'50 | 9°30'30 | 25°25'25 | 25°41'41 | 9°5'5 | 8°12'12 | 7°51'51 | 0°18'18 | 19°44'44 | M 16 |
| T 17 | 7 45 31 | 26°48'16 | 23°30'30 | 8°57'57 | 11°6'6 | 15°47'47 | 4°45'45 | 9°37'37 | 25°24'24 | 25°40'40 | 9°6'6 | 8°6'6 | 7°48'48 | 0°25'25 | 19°50'50 | T 17 |
| W 18 | 7 49 28 | 27°49'23 | 7°51'51 | 10°25'25 | 12°13'13 | 16°26'26 | 4°40'40 | 9°44'44 | 25°23'23 | 25°39'39 | 9°8'8 | 8°3'3 | 7°45'45 | 0°32'32 | 19°56'56 | W 18 |
| T 19 | 7 53 24 | 28°50'29 | 22°1'1 | 11°53'53 | 13°20'20 | 17°5'5 | 4°35'35 | 9°51'51 | 25°22'22 | 25°39'39 | 9°9'9 | 8°1'1 | 7°42'42 | 0°38'38 | 20°2'2 | T 19 |
| F 20 | 7 57 21 | 29°51'34 | 5°57'57 | 13°21'21 | 14°28'28 | 17°44'44 | 4°30'30 | 9°59'59 | 25°21'21 | 25°38'38 | 9°10'10 | 8°1'1 | 7°39'39 | 0°45'45 | 20°8'8 | F 20 |
| S 21 | 8 1 17 | 0°52'38 | 19°42'42 | 14°51'51 | 15°36'36 | 18°23'23 | 4°24'24 | 10°6'6 | 25°20'20 | 25°38'38 | 9°12'12 | 8°1'1 | 7°36'36 | 0°52'52 | 20°15'15 | S 21 |
| S 22 | 8 5 14 | 1°53'41 | 3°11'11 | 16°20'20 | 16°44'44 | 19°3'3 | 4°19'19 | 10°13'13 | 25°19'19 | 25°37'37 | 9°13'13 | 7°59'59 | 7°32'32 | 0°58'58 | 20°20'20 | S 22 |
| M 23 | 8 9 11 | 2°54'44 | 16°36'36 | 17°51'51 | 17°52'52 | 19°42'42 | 4°13'13 | 10°20'20 | 25°18'18 | 25°37'37 | 9°14'14 | 7°55'55 | 7°29'29 | 1°5'5 | 20°26'26 | M 23 |
| T 24 | 8 13 7 | 3°55'45 | 29°48'48 | 19°22'22 | 19°0'0 | 20°21'21 | 4°7'7 | 10°27'27 | 25°17'17 | 25°36'36 | 9°16'16 | 7°47'47 | 7°26'26 | 1°12'12 | 20°32'32 | T 24 |
| W 25 | 8 17 4 | 4°56'46 | 12°48'48 | 20°54'54 | 20°9'9 | 21°0'0 | 4°1'1 | 10°34'34 | 25°15'15 | 25°36'36 | 9°17'17 | 7°37'37 | 7°23'23 | 1°18'18 | 20°38'38 | W 25 |
| T 26 | 8 21 0 | 5°57'45 | 25°38'38 | 22°27'27 | 21°17'17 | 21°39'39 | 3°55'55 | 10°41'41 | 25°14'14 | 25°36'36 | 9°19'19 | 7°24'24 | 7°20'20 | 1°25'25 | 20°44'44 | T 26 |
| F 27 | 8 24 57 | 6°58'44 | 8°16'16 | 24°0'0 | 22°26'26 | 22°18'18 | 3°48'48 | 10°49'49 | 25°12'12 | 25°35'35 | 9°20'20 | 7°10'10 | 7°17'17 | 1°32'32 | 20°50'50 | F 27 |
| S 28 | 8 28 53 | 7°59'42 | 20°42'42 | 25°33'33 | 23°35'35 | 22°58'58 | 3°42'42 | 10°56'56 | 25°11'11 | 25°35'35 | 9°21'21 | 6°55'55 | 7°13'13 | 1°38'38 | 20°55'55 | S 28 |
| S 29 | 8 32 50 | 9°0'39 | 2°15'56 | 27°8'8 | 24°44'44 | 23°37'37 | 3°36'36 | 11°3'3 | 25°9'9 | 25°35'35 | 9°23'23 | 6°42'42 | 7°10'10 | 1°45'45 | 21°1'1 | S 29 |
| M 30 | 8 36 46 | 10°1'35 | 14°59'59 | 28°43'43 | 25°53'53 | 24°16'16 | 3°29'29 | 11°10'10 | 25°8'8 | 25°35'35 | 9°24'24 | 6°31'31 | 7°7'7 | 1°52'52 | 21°6'6 | M 30 |
| T 31 | 8 40 43 | 11°2'31 | 26°15'54 | 0°18'18 | 27°57'57 | 24°55'55 | 3°15'15 | 11°17'17 | 25°7'7 | 25°34'34 | 9°26'26 | 6°11'11 | 7°11'11 | 1°58'58 | 21°12'12 | T 31 |

Delta T = 74.87 sec

FEBRUARY 2051

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|----------|-------|-------|-------|-------|-------|-------|--------|--------|-------|-------|------|------|-------|------|
| W 1 | 8 44 39 | 12° 3'25 | 8°43 | 1°55 | 28°12 | 25°35 | 3°R15 | 11°25 | 25°R 5 | 25°R34 | 9°27 | 6°R17 | 7°11 | 2°45 | 21°17 | W 1 |
| T 2 | 8 48 36 | 13° 4'19 | 20°30 | 3°32 | 29°21 | 26°14 | 3°18 | 11°32 | 25°18 | 25°34 | 9°29 | 6°15 | 6°57 | 2°12 | 21°22 | T 2 |
| F 3 | 8 52 33 | 14° 5'12 | 2°11 | 5° 9 | 0°31 | 26°53 | 3° 1 | 11°39 | 25° 1 | 25°34 | 9°30 | 6°D14 | 6°54 | 2°18 | 21°28 | F 3 |
| S 4 | 8 56 29 | 15° 6'05 | 14°20 | 6°48 | 1°41 | 27°33 | 2°54 | 11°46 | 24°59 | 25°34 | 9°32 | 6°R14 | 6°51 | 2°25 | 21°33 | S 4 |
| S 5 | 9 0 26 | 16° 6'56 | 26°33 | 8°27 | 2°51 | 28°12 | 2°47 | 11°53 | 24°58 | 25°D34 | 9°33 | 6°13 | 6°48 | 2°32 | 21°38 | S 5 |
| M 6 | 9 4 22 | 17° 7'47 | 9°16 | 10° 7 | 4° 1 | 28°51 | 2°39 | 12° 0 | 24°56 | 25°34 | 9°35 | 6°12 | 6°45 | 2°38 | 21°43 | M 6 |
| T 7 | 9 8 19 | 18° 8'37 | 22° 2 | 11°48 | 5°11 | 29°31 | 2°32 | 12° 8 | 24°54 | 25°34 | 9°36 | 6° 7 | 6°42 | 2°45 | 21°48 | T 7 |
| W 8 | 9 12 15 | 19° 9'26 | 5°26 | 13°29 | 6°21 | 0°10 | 2°24 | 12°15 | 24°52 | 25°34 | 9°38 | 6° 1 | 6°38 | 2°52 | 21°53 | W 8 |
| T 9 | 9 16 12 | 20°10'14 | 19°19 | 15°11 | 7°31 | 0°49 | 2°17 | 12°22 | 24°50 | 25°34 | 9°39 | 5°51 | 6°35 | 2°58 | 21°58 | T 9 |
| F 10 | 9 20 9 | 21°11'00 | 3°39 | 16°54 | 8°42 | 1°29 | 2° 9 | 12°29 | 24°48 | 25°35 | 9°41 | 5°40 | 6°32 | 3° 5 | 22° 3 | F 10 |
| S 11 | 9 24 5 | 22°11'46 | 18°20 | 18°38 | 9°52 | 2° 8 | 2° 2 | 12°36 | 24°46 | 25°35 | 9°43 | 5°29 | 6°29 | 3°12 | 22° 7 | S 11 |
| S 12 | 9 28 2 | 23°12'30 | 3°15 | 20°23 | 11° 3 | 2°47 | 1°54 | 12°43 | 24°44 | 25°35 | 9°44 | 5°18 | 6°26 | 3°18 | 22°12 | S 12 |
| M13 | 9 31 58 | 24°13'13 | 18°15 | 22° 8 | 12°13 | 3°27 | 1°46 | 12°50 | 24°42 | 25°35 | 9°46 | 5° 9 | 6°23 | 3°25 | 22°16 | M13 |
| T 14 | 9 35 55 | 25°13'54 | 3°11 | 23°55 | 13°24 | 4° 6 | 1°38 | 12°57 | 24°40 | 25°36 | 9°47 | 5° 3 | 6°19 | 3°32 | 22°21 | T 14 |
| W15 | 9 39 51 | 26°14'34 | 17°54 | 25°42 | 14°35 | 4°46 | 1°30 | 13° 5 | 24°37 | 25°36 | 9°49 | 4°59 | 6°16 | 3°38 | 22°25 | W15 |
| T 16 | 9 43 48 | 27°15'12 | 2°19 | 27°30 | 15°46 | 5°25 | 1°22 | 13°12 | 24°35 | 25°36 | 9°51 | 4°D58 | 6°13 | 3°45 | 22°30 | T 16 |
| F 17 | 9 47 44 | 28°15'48 | 16°25 | 29°18 | 16°57 | 6° 4 | 1°15 | 13°19 | 24°33 | 25°37 | 9°52 | 4°58 | 6°10 | 3°52 | 22°34 | F 17 |
| S 18 | 9 51 41 | 29°16'22 | 0°11 | 1°18 | 18° 8 | 6°44 | 1° 7 | 13°26 | 24°31 | 25°37 | 9°54 | 4°R59 | 6° 7 | 3°58 | 22°38 | S 18 |
| S 19 | 9 55 37 | 0°16'55 | 13°37 | 2°58 | 19°19 | 7°23 | 0°59 | 13°33 | 24°28 | 25°38 | 9°55 | 4°58 | 6° 3 | 4° 5 | 22°42 | S 19 |
| M20 | 9 59 34 | 1°17'26 | 26°47 | 4°49 | 20°30 | 8° 2 | 0°51 | 13°40 | 24°26 | 25°38 | 9°57 | 4°55 | 6° 0 | 4°12 | 22°46 | M20 |
| T 21 | 10 3 31 | 2°17'55 | 9°42 | 6°40 | 21°41 | 8°42 | 0°43 | 13°47 | 24°24 | 25°39 | 9°59 | 4°49 | 5°57 | 4°18 | 22°50 | T 21 |
| W22 | 10 7 27 | 3°18'22 | 22°24 | 8°32 | 22°53 | 9°21 | 0°35 | 13°54 | 24°21 | 25°39 | 10° 0 | 4°41 | 5°54 | 4°25 | 22°54 | W22 |
| T 23 | 10 11 24 | 4°18'48 | 4°15 | 10°25 | 24° 4 | 10° 1 | 0°27 | 14° 0 | 24°19 | 25°40 | 10° 2 | 4°31 | 5°51 | 4°32 | 22°58 | T 23 |
| F 24 | 10 15 20 | 5°19'12 | 17°15 | 12°18 | 25°15 | 10°40 | 0°19 | 14° 7 | 24°17 | 25°41 | 10° 4 | 4°20 | 5°48 | 4°38 | 23° 1 | F 24 |
| S 25 | 10 19 17 | 6°19'33 | 29°27 | 14°11 | 26°27 | 11°19 | 0°11 | 14°14 | 24°14 | 25°41 | 10° 5 | 4° 8 | 5°44 | 4°45 | 23° 5 | S 25 |
| S 26 | 10 23 13 | 7°19'54 | 11°15 | 16° 4 | 27°39 | 11°59 | 0° 4 | 14°21 | 24°12 | 25°42 | 10° 7 | 3°58 | 5°41 | 4°52 | 23° 8 | S 26 |
| M27 | 10 27 10 | 8°20'12 | 23°27 | 17°57 | 28°50 | 12°38 | 29°15 | 14°28 | 24° 9 | 25°43 | 10° 8 | 3°49 | 5°38 | 4°58 | 23°12 | M27 |
| T 28 | 10 31 6 | 9°17'20 | 5°18 | 19°49 | 0°22 | 13°17 | 29°18 | 14°35 | 24°17 | 25°43 | 10°10 | 3°14 | 5°18 | 5°45 | 23°15 | T 28 |

ASTRODIENST EPHEMERIS for the year 2051

geocentric

MARCH 2051

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|-----------|---------|---------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|--------|------|
| W 1 | 10 35 3 | 10°20'44 | 17°15'6 | 21°41' | 18°13' | 13°57' | 29°R40 | 14°41' | 24°R 4 | 25°44' | 10°12' | 3°R38 | 5°M32 | 5°12' | 23°18' | W 1 |
| T 2 | 10 39 0 | 11°20'58 | 28°54' | 23°31' | 2°25' | 14°36' | 29°Q33 | 14°48' | 24°M 2 | 25°45' | 10°13' | 3°D36 | 5°28' | 5°18' | 23°22' | T 2 |
| F 3 | 10 42 56 | 12°21'10 | 10°M45 | 25°21' | 3°37' | 15°15' | 29°25' | 14°55' | 23°59' | 25°46' | 10°15' | 3°M37 | 5°25' | 5°25' | 23°25' | F 3 |
| S 4 | 10 46 53 | 13°21'21 | 22°43' | 27° 8' | 4°49' | 15°55' | 29°18' | 15° 1' | 23°57' | 25°47' | 10°17' | 3°38' | 5°22' | 5°32' | 23°28' | S 4 |
| S 5 | 10 50 49 | 14°21'30 | 4°J55 | 28°54' | 6° 1' | 16°34' | 29°10' | 15° 8' | 23°54' | 25°48' | 10°18' | 3°39' | 5°19' | 5°38' | 23°31' | S 5 |
| M 6 | 10 54 46 | 15°21'37 | 17°24' | 0°Y36 | 7°13' | 17°13' | 29° 3' | 15°14' | 23°52' | 25°49' | 10°20' | 3°R39 | 5°16' | 5°45' | 23°33' | M 6 |
| T 7 | 10 58 42 | 16°21'43 | 0°Z16 | 2°15' | 8°25' | 17°53' | 28°56' | 15°21' | 23°49' | 25°50' | 10°22' | 3°38' | 5°13' | 5°52' | 23°36' | T 7 |
| W 8 | 11 2 39 | 17°21'48 | 13°34' | 3°51' | 9°37' | 18°32' | 28°48' | 15°28' | 23°46' | 25°51' | 10°23' | 3°35' | 5° 9' | 5°58' | 23°39' | W 8 |
| T 9 | 11 6 35 | 18°21'51 | 27°22' | 5°22' | 10°49' | 19°11' | 28°41' | 15°34' | 23°44' | 25°52' | 10°25' | 3°30' | 5° 6' | 6° 5' | 23°41' | T 9 |
| F 10 | 11 10 32 | 19°21'52 | 11°J39 | 6°49' | 12° 1' | 19°50' | 28°34' | 15°40' | 23°41' | 25°53' | 10°26' | 3°24' | 5° 3' | 6°12' | 23°44' | F 10 |
| S 11 | 11 14 29 | 20°21'51 | 26°21' | 8°10' | 13°13' | 20°30' | 28°27' | 15°47' | 23°39' | 25°54' | 10°28' | 3°17' | 5° 0' | 6°18' | 23°46' | S 11 |
| S 12 | 11 18 25 | 21°21'49 | 11°K23 | 9°25' | 14°25' | 21° 9' | 28°20' | 15°53' | 23°36' | 25°55' | 10°30' | 3°11' | 4°57' | 6°25' | 23°48' | S 12 |
| M13 | 11 22 22 | 22°21'44 | 26°35' | 10°34' | 15°38' | 21°48' | 28°14' | 15°59' | 23°33' | 25°57' | 10°31' | 3° 5' | 4°54' | 6°32' | 23°50' | M13 |
| T 14 | 11 26 18 | 23°21'38 | 11°Y48 | 11°36' | 16°50' | 22°27' | 28° 7' | 16° 6' | 23°31' | 25°58' | 10°33' | 3° 2' | 4°50' | 6°38' | 23°52' | T 14 |
| W15 | 11 30 15 | 24°21'30 | 26°50' | 12°30' | 18° 2' | 23° 7' | 28° 1' | 16°12' | 23°28' | 25°59' | 10°34' | 3°D 0 | 4°47' | 6°45' | 23°54' | W15 |
| T 16 | 11 34 11 | 25°21'20 | 11°J35 | 13°17' | 19°15' | 23°46' | 27°54' | 16°18' | 23°25' | 26° 0' | 10°36' | 3° 0' | 4°44' | 6°52' | 23°56' | T 16 |
| F 17 | 11 38 8 | 26°21'07 | 25°57' | 13°57' | 20°27' | 24°25' | 27°48' | 16°24' | 23°23' | 26° 2' | 10°38' | 3° 1' | 4°41' | 6°58' | 23°58' | F 17 |
| S 18 | 11 42 4 | 27°20'52 | 9°II54 | 14°28' | 21°39' | 25° 4' | 27°42' | 16°30' | 23°20' | 26° 3' | 10°39' | 3° 3' | 4°38' | 7° 5' | 24° 0' | S 18 |
| S 19 | 11 46 1 | 28°20'35 | 23°27' | 14°50' | 22°52' | 25°43' | 27°36' | 16°36' | 23°18' | 26° 4' | 10°41' | 3°R 4 | 4°34' | 7°12' | 24° 1' | S 19 |
| M20 | 11 49 58 | 29°20'16 | 6°J37 | 15° 5' | 24° 4' | 26°23' | 27°30' | 16°42' | 23°15' | 26° 6' | 10°42' | 3° 4' | 4°31' | 7°18' | 24° 3' | M20 |
| T 21 | 11 53 54 | 0°Y19'54 | 19°26' | 15°R11 | 25°17' | 27° 2' | 27°24' | 16°48' | 23°12' | 26° 7' | 10°44' | 3° 2' | 4°28' | 7°25' | 24° 4' | T 21 |
| W22 | 11 57 51 | 1°19'30 | 1°J59 | 15° 9' | 26°29' | 27°41' | 27°19' | 16°54' | 23°10' | 26° 9' | 10°46' | 2°59' | 4°25' | 7°32' | 24° 5' | W22 |
| T 23 | 12 1 47 | 2°19'04 | 14°19' | 14°59' | 27°42' | 28°20' | 27°14' | 16°59' | 23° 7' | 26°10' | 10°47' | 2°55' | 4°22' | 7°38' | 24° 7' | T 23 |
| F 24 | 12 5 44 | 3°18'36 | 26°28' | 14°41' | 28°54' | 28°59' | 27° 8' | 17° 5' | 23° 5' | 26°11' | 10°49' | 2°50' | 4°19' | 7°45' | 24° 8' | F 24 |
| S 25 | 12 9 40 | 4°18'05 | 8°M28 | 14°17' | 0°K 7' | 29°38' | 27° 3' | 17°11' | 23° 2' | 26°13' | 10°50' | 2°44' | 4°15' | 7°52' | 24° 9' | S 25 |
| S 26 | 12 13 37 | 5°17'32 | 20°23' | 13°46' | 1°19' | 0°II17 | 26°58' | 17°16' | 23° 0' | 26°15' | 10°52' | 2°40' | 4°12' | 7°58' | 24°10' | S 26 |
| M27 | 12 17 33 | 6°16'57 | 2°J13 | 13°10' | 2°32' | 0°56' | 26°54' | 17°22' | 22°57' | 26°16' | 10°53' | 2°36' | 4° 9' | 8° 5' | 24°10' | M27 |
| T 28 | 12 21 30 | 7°16'20 | 14° 2' | 12°29' | 3°44' | 1°35' | 26°49' | 17°27' | 22°55' | 26°18' | 10°55' | 2°33' | 4° 6' | 8°12' | 24°11' | T 28 |
| W29 | 12 25 26 | 8°15'41 | 25°51' | 11°43' | 4°57' | 2°14' | 26°44' | 17°33' | 22°52' | 26°19' | 10°56' | 2°32' | 4° 3' | 8°18' | 24°12' | W29 |
| T 30 | 12 29 23 | 9°15'00 | 7°M42 | 10°55' | 6°10' | 2°54' | 26°40' | 17°38' | 22°50' | 26°21' | 10°58' | 2°D32 | 3°59' | 8°25' | 24°12' | T 30 |
| F 31 | 12 33 20 | 10°Y14'18 | 19°M37 | 10°Y 6' | 7°K22 | 3°II33 | 26°Q36 | 17°J43 | 22°M47 | 26°J23 | 10°J59 | 2°M32 | 3°M56 | 8°J32 | 24°J13 | F 31 |

Delta T = 74.92 sec

APRIL 2051

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|-----------|--------|--------|--------|---------|--------|--------|--------|--------|--------|-------|-------|--------|--------|------|
| S 1 | 12 37 16 | 11°Y13'33 | 1°J41 | 9°R15 | 8°K35 | 4°II12 | 26°R32 | 17°J49 | 22°R45 | 26°J24 | 11°K 1 | 2°M34 | 3°M53 | 8°J38 | 24°J13 | S 1 |
| S 2 | 12 41 13 | 12°12'46 | 13°57' | 8°Y24 | 9°48' | 4°50' | 26°Q28 | 17°54' | 22°M42 | 26°26' | 11° 2' | 2°36' | 3°50' | 8°45' | 24°13' | S 2 |
| M 3 | 12 45 9 | 13°11'58 | 26°28' | 7°35' | 11° 1' | 5°29' | 26°25' | 17°59' | 22°40' | 26°28' | 11° 3' | 2°37' | 3°47' | 8°52' | 24°13' | M 3 |
| T 4 | 12 49 6 | 14°11'08 | 9°Z18 | 6°48' | 12°13' | 6° 8' | 26°21' | 18° 4' | 22°37' | 26°30' | 11° 5' | 2°R38 | 3°44' | 8°58' | 24°R13 | T 4 |
| W 5 | 12 53 2 | 15°10'16 | 22°31' | 6° 4' | 13°26' | 6°47' | 26°18' | 18° 9' | 22°35' | 26°31' | 11° 6' | 2°38' | 3°40' | 9° 5' | 24°13' | W 5 |
| T 6 | 12 56 59 | 16° 9'23 | 6°J 9 | 5°23' | 14°39' | 7°26' | 26°15' | 18°14' | 22°33' | 26°33' | 11° 8' | 2°37' | 3°37' | 9°12' | 24°13' | T 6 |
| F 7 | 13 0 55 | 17° 8'28 | 20°14' | 4°47' | 15°52' | 8° 5' | 26°12' | 18°19' | 22°30' | 26°35' | 11° 9' | 2°35' | 3°34' | 9°18' | 24°13' | F 7 |
| S 8 | 13 4 52 | 18° 7'30 | 4°K44 | 4°15' | 17° 5' | 8°44' | 26° 9' | 18°24' | 22°28' | 26°37' | 11°10' | 2°33' | 3°31' | 9°25' | 24°12' | S 8 |
| S 9 | 13 8 49 | 19° 6'31 | 19°36' | 3°48' | 18°17' | 9°23' | 26° 7' | 18°28' | 22°26' | 26°39' | 11°12' | 2°32' | 3°28' | 9°32' | 24°12' | S 9 |
| M10 | 13 12 45 | 20° 5'31 | 4°Y42 | 3°26' | 19°30' | 10° 2' | 26° 5' | 18°33' | 22°24' | 26°40' | 11°13' | 2°30' | 3°25' | 9°38' | 24°11' | M10 |
| T 11 | 13 16 42 | 21° 4'28 | 19°54' | 3° 9' | 20°43' | 10°41' | 26° 2' | 18°37' | 22°21' | 26°42' | 11°14' | 2°30' | 3°21' | 9°45' | 24°11' | T 11 |
| W12 | 13 20 38 | 22° 3'23 | 5°J 2 | 2°58' | 21°56' | 11°20' | 26° 0' | 18°42' | 22°19' | 26°44' | 11°16' | 2°D29 | 3°18' | 9°52' | 24°10' | W12 |
| T 13 | 13 24 35 | 23° 2'16 | 19°37' | 2°53' | 23° 9' | 11°58' | 25°59' | 18°46' | 22°17' | 26°46' | 11°17' | 2°30' | 3°15' | 9°58' | 24° 9' | T 13 |
| F 14 | 13 28 31 | 24° 1'08 | 4°II52 | 2°D52 | 24°22' | 12°37' | 25°57' | 18°51' | 22°15' | 26°48' | 11°18' | 2°30' | 3°12' | 10° 5' | 24° 8' | F 14 |
| S 15 | 13 32 28 | 24°59'56 | 18°42' | 2°57' | 25°35' | 13°16' | 25°56' | 18°55' | 22°13' | 26°50' | 11°20' | 2°31' | 3° 9' | 10°11' | 24° 7' | S 15 |
| S 16 | 13 36 24 | 25°58'43 | 2°J26 | 3° 7' | 26°48' | 13°55' | 25°54' | 18°59' | 22°11' | 26°52' | 11°21' | 2°32' | 3° 5' | 10°18' | 24° 6' | S 16 |
| M17 | 13 40 21 | 26°57'28 | 15°43' | 3°22' | 28° 0' | 14°34' | 25°53' | 19° 3' | 22° 9' | 26°54' | 11°22' | 2°32' | 3° 2' | 10°25' | 24° 5' | M17 |
| T 18 | 13 44 18 | 27°56'10 | 28°36' | 3°42' | 29°13' | 15°12' | 25°53' | 19° 7' | 22° 7' | 26°56' | 11°23' | 2°R32 | 2°59' | 10°31' | 24° 3' | T 18 |
| W19 | 13 48 14 | 28°54'50 | 11°J 8 | 4° 6' | 0°Y26 | 15°51' | 25°52' | 19°11' | 22° 5' | 26°58' | 11°25' | 2°32' | 2°56' | 10°38' | 24° 2' | W19 |
| T 20 | 13 52 11 | 29°53'27 | 23°24' | 4°34' | 1°39' | 16°30' | 25°51' | 19°15' | 22° 3' | 27° 0' | 11°26' | 2°32' | 2°53' | 10°45' | 24° 1' | T 20 |
| F 21 | 13 56 7 | 0°J52'03 | 5°M27 | 5° 7' | 2°52' | 17° 9' | 25°51' | 19°19' | 22° 1' | 27° 2' | 11°27' | 2°32' | 2°50' | 10°51' | 23°59' | F 21 |
| S 22 | 14 0 4 | 1°50'36 | 17°22' | 5°44' | 4° 5' | 17°47' | 25°D51 | 19°22' | 21°59' | 27° 4' | 11°28' | 2°31' | 2°46' | 10°58' | 23°57' | S 22 |
| S 23 | 14 4 0 | 2°49'07 | 29°12' | 6°25' | 5°18' | 18°26' | 25°51' | 19°26' | 21°58' | 27° 6' | 11°29' | 2°D31 | 2°43' | 11° 5' | 23°56' | S 23 |
| M24 | 14 7 57 | 3°47'37 | 11°J 0 | 7° 9' | 6°31' | 19° 5' | 25°51' | 19°29' | 21°56' | 27° 8' | 11°30' | 2°31' | 2°40' | 11°11' | 23°54' | M24 |
| T 25 | 14 11 53 | 4°46'04 | 22°48' | 7°57' | 7°44' | 19°43' | 25°52' | 19°33' | 21°54' | 27°11' | 11°31' | 2°32' | 2°37' | 11°18' | 23°52' | T 25 |
| W26 | 14 15 50 | 5°44'29 | 4°M41 | 8°48' | 8°57' | 20°22' | 25°53' | 19°36' | 21°52' | 27°13' | 11°32' | 2°R32 | 2°34' | 11°25' | 23°50' | W26 |
| T 27 | 14 19 46 | 6°42'52 | 16°39' | 9°43' | 10°10' | 21° 0' | 25°53' | 19°39' | 21°51' | 27°15' | 11°33' | 2°32' | 2°31' | 11°31' | 23°48' | T 27 |
| F 28 | 14 23 43 | 7°41'14 | 28°45' | 10°40' | 11°23' | 21°39' | 25°54' | 19°43' | 21°49' | 27°17' | 11°34' | 2°31' | 2°27' | 11°38' | 23°46' | F 28 |
| S 29 | 14 27 40 | 8°39'34 | 11°J 1 | 11°41' | 12°36' | 22°18' | 25°56' | 19°46' | 21°48' | 27°19' | 11°36' | 2°30' | 2°24' | 11°45' | 23°43' | S 29 |
| S 30 | 14 31 36 | 9°J37'52 | 23°J28 | 12°Y44 | 13°Y49 | 22°II56 | 25°Q57 | 19°J49 | 21°M46 | 27°J21 | 11°K37 | 2°M30 | 2°M21 | 11°J51 | 23°J41 | S 30 |

Delta T = 74.95 sec

ASTRODIENST EPHEMERIS for the year 2051

geocentric

MAY 2051

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|----------|-------|-------|-------|-------|-------|--------|--------|-------|-------|-------|------|-------|--------|------|
| M 1 | 14 35 33 | 10♈36'09 | 6♈ 9 | 13♉50 | 15♉ 2 | 23♊35 | 25♊59 | 19♋52 | 21♋45 | 27♋23 | 11♌37 | 2°R29 | 2♌18 | 11♍58 | 23°R39 | M 1 |
| T 2 | 14 39 29 | 11°34'24 | 19° 5 | 14°58 | 16°15 | 24°13 | 26° 0 | 19°55 | 21♎43 | 27°26 | 11°38 | 2♌28 | 2°15 | 12° 5 | 23♎36 | T 2 |
| W 3 | 14 43 26 | 12°32'38 | 2♌20 | 16° 9 | 17°28 | 24°52 | 26° 2 | 19°57 | 21°42 | 27°28 | 11°39 | 2°27 | 2°11 | 12°11 | 23°34 | W 3 |
| T 4 | 14 47 22 | 13°30'50 | 15°54 | 17°23 | 18°41 | 25°30 | 26° 4 | 20° 0 | 21°41 | 27°30 | 11°40 | 2°D27 | 2° 8 | 12°18 | 23°31 | T 4 |
| F 5 | 14 51 19 | 14°29'01 | 29°48 | 18°39 | 19°54 | 26° 9 | 26° 7 | 20° 2 | 21°39 | 27°32 | 11°41 | 2°27 | 2° 5 | 12°25 | 23°28 | F 5 |
| S 6 | 14 55 15 | 15°27'10 | 14♋ 3 | 19°57 | 21° 7 | 26°47 | 26° 9 | 20° 5 | 21°38 | 27°34 | 11°42 | 2°28 | 2° 2 | 12°31 | 23°26 | S 6 |
| S 7 | 14 59 12 | 16°25'18 | 28°35 | 21°18 | 22°20 | 27°26 | 26°12 | 20° 7 | 21°37 | 27°37 | 11°43 | 2°29 | 1°59 | 12°38 | 23°23 | S 7 |
| M 8 | 15 3 9 | 17°23'24 | 13♉22 | 22°41 | 23°33 | 28° 4 | 26°14 | 20°10 | 21°36 | 27°39 | 11°44 | 2°30 | 1°56 | 12°45 | 23°20 | M 8 |
| T 9 | 15 7 5 | 18°21'29 | 28°18 | 24° 6 | 24°46 | 28°43 | 26°17 | 20°12 | 21°35 | 27°41 | 11°45 | 2°R31 | 1°52 | 12°51 | 23°17 | T 9 |
| W10 | 15 11 2 | 19°19'33 | 13♈15 | 25°33 | 25°59 | 29°21 | 26°21 | 20°14 | 21°34 | 27°43 | 11°45 | 2°30 | 1°49 | 12°58 | 23°14 | W10 |
| T 11 | 15 14 58 | 20°17'35 | 28° 5 | 27° 2 | 27°12 | 29°59 | 26°24 | 20°16 | 21°33 | 27°45 | 11°46 | 2°29 | 1°46 | 13° 4 | 23°11 | T 11 |
| F 12 | 15 18 55 | 21°15'35 | 12♊40 | 28°33 | 28°26 | 0♈38 | 26°27 | 20°18 | 21°32 | 27°48 | 11°47 | 2°28 | 1°43 | 13°11 | 23° 8 | F 12 |
| S 13 | 15 22 51 | 22°13'34 | 26°54 | 0♈ 7 | 29°39 | 1°16 | 26°31 | 20°20 | 21°31 | 27°50 | 11°48 | 2°25 | 1°40 | 13°18 | 23° 4 | S 13 |
| S 14 | 15 26 48 | 23°11'31 | 10♈44 | 1°42 | 0♈52 | 1°55 | 26°35 | 20°21 | 21°30 | 27°52 | 11°48 | 2°22 | 1°36 | 13°24 | 23° 1 | S 14 |
| M15 | 15 30 44 | 24° 9'26 | 24° 7 | 3°20 | 2° 5 | 2°33 | 26°39 | 20°23 | 21°29 | 27°54 | 11°49 | 2°20 | 1°33 | 13°31 | 22°58 | M15 |
| T 16 | 15 34 41 | 25° 7'19 | 7♊ 6 | 5° 0 | 3°18 | 3°12 | 26°43 | 20°24 | 21°29 | 27°57 | 11°50 | 2°18 | 1°30 | 13°38 | 22°54 | T 16 |
| W17 | 15 38 38 | 26° 5'11 | 19°41 | 6°42 | 4°31 | 3°50 | 26°47 | 20°26 | 21°28 | 27°59 | 11°50 | 2°16 | 1°27 | 13°44 | 22°51 | W17 |
| T 18 | 15 42 34 | 27° 3'01 | 1♎58 | 8°25 | 5°44 | 4°28 | 26°52 | 20°27 | 21°27 | 28° 1 | 11°51 | 2°D16 | 1°24 | 13°51 | 22°48 | T 18 |
| F 19 | 15 46 31 | 28° 0'49 | 14° 1 | 10°11 | 6°57 | 5° 7 | 26°56 | 20°28 | 21°27 | 28° 3 | 11°51 | 2°17 | 1°21 | 13°58 | 22°44 | F 19 |
| S 20 | 15 50 27 | 28°58'35 | 25°54 | 11°59 | 8°10 | 5°45 | 27° 1 | 20°29 | 21°26 | 28° 6 | 11°52 | 2°19 | 1°17 | 14° 4 | 22°40 | S 20 |
| S 21 | 15 54 24 | 29°56'20 | 7♊42 | 13°49 | 9°23 | 6°23 | 27° 6 | 20°31 | 21°26 | 28° 8 | 11°53 | 2°21 | 1°14 | 14°11 | 22°37 | S 21 |
| M22 | 15 58 20 | 0♊54'03 | 19°30 | 15°41 | 10°37 | 7° 1 | 27°11 | 20°31 | 21°25 | 28°10 | 11°53 | 2°22 | 1°11 | 14°18 | 22°33 | M22 |
| T 23 | 16 2 17 | 1°51'45 | 1♌22 | 17°35 | 11°50 | 7°40 | 27°17 | 20°32 | 21°25 | 28°12 | 11°54 | 2°R23 | 1° 8 | 14°24 | 22°29 | T 23 |
| W24 | 16 6 13 | 2°49'25 | 13°21 | 19°31 | 13° 3 | 8°18 | 27°22 | 20°33 | 21°25 | 28°15 | 11°54 | 2°22 | 1° 5 | 14°31 | 22°26 | W24 |
| T 25 | 16 10 10 | 3°47'04 | 25°29 | 21°30 | 14°16 | 8°56 | 27°28 | 20°34 | 21°24 | 28°17 | 11°54 | 2°20 | 1° 2 | 14°38 | 22°22 | T 25 |
| F 26 | 16 14 7 | 4°44'42 | 7♊48 | 23°30 | 15°29 | 9°34 | 27°33 | 20°34 | 21°24 | 28°19 | 11°55 | 2°17 | 0°58 | 14°44 | 22°18 | F 26 |
| S 27 | 16 18 3 | 5°42'18 | 20°20 | 25°32 | 16°42 | 10°13 | 27°39 | 20°35 | 21°24 | 28°21 | 11°55 | 2°12 | 0°55 | 14°51 | 22°14 | S 27 |
| S 28 | 16 22 0 | 6°39'54 | 3♈ 6 | 27°35 | 17°55 | 10°51 | 27°45 | 20°35 | 21°24 | 28°24 | 11°56 | 2° 6 | 0°52 | 14°58 | 22°10 | S 28 |
| M29 | 16 25 56 | 7°37'28 | 16° 5 | 29°41 | 19° 9 | 11°29 | 27°51 | 20°35 | 21°D24 | 28°26 | 11°56 | 2° 1 | 0°49 | 15° 4 | 22° 6 | M29 |
| T 30 | 16 29 53 | 8°35'01 | 29°17 | 1♊48 | 20°22 | 12° 7 | 27°58 | 20°35 | 21°24 | 28°28 | 11°56 | 1°55 | 0°46 | 15°11 | 22° 2 | T 30 |
| W31 | 16 33 49 | 9♊32'34 | 12♋43 | 3♊56 | 21♈35 | 12♈45 | 28♊ 4 | 20°R35 | 21♎24 | 28♈30 | 11♌57 | 1♌51 | 0♌42 | 15♍18 | 21♎58 | W31 |

Delta T = 74.97 sec

JUNE 2051

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|----------|-------|-------|-------|-------|-------|--------|-------|-------|--------|-------|-------|-------|--------|------|
| T 1 | 16 37 46 | 10♊30'05 | 26♋22 | 6♊ 6 | 22♈48 | 13♈24 | 28♊11 | 20°R35 | 21♎24 | 28♈33 | 11♌57 | 1°R49 | 0♌39 | 15♍24 | 21°R54 | T 1 |
| F 2 | 16 41 42 | 11°27'36 | 10♋14 | 8°16 | 24° 1 | 14° 2 | 28°17 | 20°35 | 21°24 | 28°35 | 11°57 | 1°D48 | 0°36 | 15°31 | 21♎50 | F 2 |
| S 3 | 16 45 39 | 12°25'06 | 24°19 | 10°27 | 25°14 | 14°40 | 28°24 | 20°35 | 21°24 | 28°37 | 11°57 | 1°D48 | 0°33 | 15°37 | 21°46 | S 3 |
| S 4 | 16 49 36 | 13°22'35 | 8♉35 | 12°39 | 26°28 | 15°18 | 28°31 | 20°35 | 21°25 | 28°39 | 11°58 | 1°49 | 0°30 | 15°44 | 21°42 | S 4 |
| M 5 | 16 53 32 | 14°20'04 | 23° 0 | 14°51 | 27°41 | 15°56 | 28°38 | 20°34 | 21°25 | 28°41 | 11°58 | 1°51 | 0°27 | 15°51 | 21°38 | M 5 |
| T 6 | 16 57 29 | 15°17'31 | 7♈32 | 17° 4 | 28°54 | 16°34 | 28°45 | 20°34 | 21°25 | 28°44 | 11°58 | 1°R51 | 0°23 | 15°57 | 21°34 | T 6 |
| W 7 | 17 1 25 | 16°14'59 | 22° 7 | 19°15 | 0♊ 7 | 17°12 | 28°53 | 20°33 | 21°26 | 28°46 | 11°58 | 1°49 | 0°20 | 16° 4 | 21°30 | W 7 |
| T 8 | 17 5 22 | 17°12'25 | 6♊37 | 21°27 | 1°21 | 17°50 | 29° 0 | 20°32 | 21°26 | 28°48 | 11°58 | 1°46 | 0°17 | 16°11 | 21°26 | T 8 |
| F 9 | 17 9 18 | 18° 9'51 | 20°58 | 23°37 | 2°34 | 18°29 | 29° 8 | 20°32 | 21°27 | 28°50 | 11°58 | 1°40 | 0°14 | 16°17 | 21°21 | F 9 |
| S 10 | 17 13 15 | 19° 7'16 | 5♈ 3 | 25°46 | 3°47 | 19° 7 | 29°16 | 20°31 | 21°28 | 28°52 | 11°58 | 1°33 | 0°11 | 16°24 | 21°17 | S 10 |
| S 11 | 17 17 11 | 20° 4'40 | 18°49 | 27°54 | 5° 0 | 19°45 | 29°23 | 20°30 | 21°28 | 28°54 | 11°58 | 1°25 | 0° 8 | 16°31 | 21°13 | S 11 |
| M12 | 17 21 8 | 21° 2'03 | 2♊11 | 0♈ 1 | 6°14 | 20°23 | 29°31 | 20°28 | 21°29 | 28°56 | 11°R58 | 1°17 | 0° 4 | 16°37 | 21° 9 | M12 |
| T 13 | 17 25 5 | 21°59'24 | 15°10 | 2° 6 | 7°27 | 21° 1 | 29°39 | 20°27 | 21°30 | 28°59 | 11°58 | 1°11 | 0° 1 | 16°44 | 21° 5 | T 13 |
| W14 | 17 29 1 | 22°56'45 | 27°47 | 4° 9 | 8°40 | 21°39 | 29°48 | 20°26 | 21°30 | 29° 1 | 11°58 | 1° 6 | 29♋58 | 16°51 | 21° 1 | W14 |
| T 15 | 17 32 58 | 23°54'05 | 10♎ 5 | 6°10 | 9°54 | 22°17 | 29°56 | 20°25 | 21°31 | 29° 3 | 11°58 | 1° 3 | 29°55 | 16°57 | 20°57 | T 15 |
| F 16 | 17 36 54 | 24°51'24 | 22° 9 | 8° 9 | 11° 7 | 22°55 | 0♎ 4 | 20°23 | 21°32 | 29° 5 | 11°58 | 1°D 1 | 29°52 | 17° 4 | 20°52 | F 16 |
| S 17 | 17 40 51 | 25°48'43 | 4♊ 2 | 10° 6 | 12°20 | 23°33 | 0°13 | 20°22 | 21°33 | 29° 7 | 11°58 | 1° 2 | 29°48 | 17°11 | 20°48 | S 17 |
| S 18 | 17 44 47 | 26°46'00 | 15°51 | 12° 1 | 13°34 | 24°11 | 0°22 | 20°20 | 21°34 | 29° 9 | 11°58 | 1° 3 | 29°45 | 17°17 | 20°44 | S 18 |
| M19 | 17 48 44 | 27°43'16 | 27°40 | 13°53 | 14°47 | 24°49 | 0°30 | 20°18 | 21°35 | 29°11 | 11°58 | 1°R 3 | 29°42 | 17°24 | 20°40 | M19 |
| T 20 | 17 52 40 | 28°40'32 | 9♌35 | 15°44 | 16° 0 | 25°27 | 0°39 | 20°16 | 21°36 | 29°13 | 11°58 | 1° 3 | 29°39 | 17°30 | 20°36 | T 20 |
| W21 | 17 56 37 | 29°37'47 | 21°40 | 17°32 | 17°14 | 26° 5 | 0°48 | 20°14 | 21°38 | 29°15 | 11°57 | 1° 1 | 29°36 | 17°37 | 20°32 | W21 |
| T 22 | 18 0 34 | 0♈35'02 | 3♊58 | 19°17 | 18°27 | 26°43 | 0°57 | 20°12 | 21°39 | 29°17 | 11°57 | 0°57 | 29°33 | 17°44 | 20°28 | T 22 |
| F 23 | 18 4 30 | 1°32'16 | 16°31 | 21° 1 | 19°40 | 27°21 | 1° 7 | 20°10 | 21°40 | 29°19 | 11°57 | 0°50 | 29°29 | 17°50 | 20°24 | F 23 |
| S 24 | 18 8 27 | 2°29'29 | 29°21 | 22°42 | 20°54 | 27°59 | 1°16 | 20° 8 | 21°41 | 29°21 | 11°57 | 0°41 | 29°26 | 17°57 | 20°20 | S 24 |
| S 25 | 18 12 23 | 3°26'42 | 12♈28 | 24°20 | 22° 7 | 28°37 | 1°25 | 20° 6 | 21°43 | 29°23 | 11°56 | 0°31 | 29°23 | 18° 4 | 20°16 | S 25 |
| M26 | 18 16 20 | 4°23'55 | 25°51 | 25°56 | 23°21 | 29°15 | 1°35 | 20° 3 | 21°44 | 29°25 | 11°56 | 0°20 | 29°20 | 18°10 | 20°12 | M26 |
| T 27 | 18 20 16 | 5°21'08 | 9♋26 | 27°30 | 24°34 | 29°53 | 1°44 | 20° 1 | 21°46 | 29°27 | 11°56 | 0°11 | 29°17 | 18°17 | 20° 8 | T 27 |
| W28 | 18 24 13 | 6°18'20 | 23°12 | 29° 2 | 25°48 | 0♊31 | 1°54 | 19°58 | 21°47 | 29°29 | 11°55 | 0° 3 | 29°14 | 18°24 | 20° 4 | W28 |
| T 29 | 18 28 10 | 7°15'32 | 7♋ 6 | 0♊31 | 27° 1 | 1° 9 | 2° 4 | 19°56 | 21°49 | 29°31 | 11°55 | 29♋57 | 29°10 | 18°30 | 20° 0 | T 29 |
| F 30 | 18 32 6 | 8♈12'44 | 21♋ 7 | 1♊57 | 28♊14 | 1♊47 | 2♎14 | 19°53 | 21♎50 | 29♈32 | 11♌54 | 29♋54 | 29♋ 7 | 18♋37 | 19♎57 | F 30 |

Delta T = 75.00 sec

ASTRODIENST EPHEMERIS for the year 2051

geocentric

JULY 2051

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|-------------------|-------------------|------------------|------------------|-------------------|-----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------|
| S 1 | 18 36 3 | 9 ⁵⁷ | 5 ¹¹ | 3 ²² | 29 ²⁸ | 2 ²⁵ | 2 ²⁴ | 19 ⁵⁰ | 21 ⁵² | 29 ³⁴ | 11 ⁵⁴ | 29 ⁵³ | 29 ⁴ | 18 ⁴⁴ | 19 ⁵³ | S 1 |
| S 2 | 18 39 59 | 10° 7'09 | 19°19 | 4°43 | 0 ⁵⁴¹ | 3° 3 | 2°34 | 19 ⁴⁷ | 21°54 | 29°36 | 11 ⁵⁴ | 29 ⁵³ | 29° 1 | 18°50 | 19 ⁴⁹ | S 2 |
| M 3 | 18 43 56 | 11° 4'22 | 3 ²⁹ | 6° 3 | 1°55 | 3°41 | 2°44 | 19°44 | 21°55 | 29°38 | 11°53 | 29°R53 | 28°58 | 18°57 | 19°45 | M 3 |
| T 4 | 18 47 52 | 12° 1'35 | 17°40 | 7°19 | 3° 9 | 4°19 | 2°54 | 19°41 | 21°57 | 29°40 | 11°53 | 29°52 | 28°54 | 19° 4 | 19°42 | T 4 |
| W 5 | 18 51 49 | 12°58'49 | 1 ⁵⁰ | 8°33 | 4°22 | 4°57 | 3° 4 | 19°38 | 21°59 | 29°41 | 11°52 | 29°49 | 28°51 | 19°10 | 19°38 | W 5 |
| T 6 | 18 55 45 | 13°56'02 | 15°56 | 9°44 | 5°36 | 5°35 | 3°15 | 19°35 | 22° 1 | 29°43 | 11°52 | 29°43 | 28°48 | 19°17 | 19°35 | T 6 |
| F 7 | 18 59 42 | 14°53'16 | 29°53 | 10°53 | 6°49 | 6°13 | 3°25 | 19°32 | 22° 3 | 29°45 | 11°51 | 29°34 | 28°45 | 19°24 | 19°31 | F 7 |
| S 8 | 19 3 39 | 15°50'29 | 13 ³⁹ | 11°59 | 8° 3 | 6°51 | 3°36 | 19°29 | 22° 5 | 29°47 | 11°50 | 29°24 | 28°42 | 19°30 | 19°28 | S 8 |
| S 9 | 19 7 35 | 16°47'43 | 27° 9 | 13° 2 | 9°17 | 7°28 | 3°46 | 19°25 | 22° 7 | 29°48 | 11°50 | 29°12 | 28°39 | 19°37 | 19°24 | S 9 |
| M10 | 19 11 32 | 17°44'57 | 10 ²¹ | 14° 2 | 10°30 | 8° 6 | 3°57 | 19°22 | 22° 9 | 29°50 | 11°49 | 29° 0 | 28°35 | 19°43 | 19°21 | M10 |
| T 11 | 19 15 28 | 18°42'11 | 23°13 | 14°58 | 11°44 | 8°44 | 4° 8 | 19°18 | 22°11 | 29°51 | 11°48 | 28°49 | 28°32 | 19°50 | 19°18 | T 11 |
| W12 | 19 19 25 | 19°39'25 | 5 ⁴⁶ | 15°52 | 12°57 | 9°22 | 4°19 | 19°15 | 22°13 | 29°53 | 11°48 | 28°41 | 28°29 | 19°57 | 19°14 | W12 |
| T 13 | 19 23 21 | 20°36'38 | 18° 2 | 16°42 | 14°11 | 10° 0 | 4°30 | 19°11 | 22°16 | 29°55 | 11°47 | 28°35 | 28°26 | 20° 3 | 19°11 | T 13 |
| F 14 | 19 27 18 | 21°33'52 | 0 ⁴ | 17°29 | 15°25 | 10°38 | 4°41 | 19° 8 | 22°18 | 29°56 | 11°46 | 28°31 | 28°23 | 20°10 | 19° 8 | F 14 |
| S 15 | 19 31 14 | 22°31'06 | 11°57 | 18°12 | 16°39 | 11°16 | 4°52 | 19° 4 | 22°20 | 29°58 | 11°46 | 28°30 | 28°20 | 20°17 | 19° 5 | S 15 |
| S 16 | 19 35 11 | 23°28'20 | 23°46 | 18°51 | 17°52 | 11°54 | 5° 3 | 19° 0 | 22°22 | 29°59 | 11°45 | 28°29 | 28°16 | 20°23 | 19° 2 | S 16 |
| M17 | 19 39 8 | 24°25'34 | 5 ³⁶ | 19°27 | 19° 6 | 12°32 | 5°14 | 18°56 | 22°25 | 0 ¹¹ | 11°44 | 28°29 | 28°13 | 20°30 | 18°59 | M17 |
| T 18 | 19 43 4 | 25°22'48 | 17°32 | 19°59 | 20°20 | 13°10 | 5°25 | 18°52 | 22°27 | 0° 2 | 11°43 | 28°28 | 28°10 | 20°37 | 18°56 | T 18 |
| W19 | 19 47 1 | 26°20'02 | 29°40 | 20°26 | 21°33 | 13°48 | 5°37 | 18°48 | 22°30 | 0° 4 | 11°43 | 28°26 | 28° 7 | 20°43 | 18°54 | W19 |
| T 20 | 19 50 57 | 27°17'16 | 12 ⁵ | 20°49 | 22°47 | 14°26 | 5°48 | 18°45 | 22°32 | 0° 5 | 11°42 | 28°21 | 28° 4 | 20°50 | 18°51 | T 20 |
| F 21 | 19 54 54 | 28°14'31 | 24°49 | 21° 8 | 24° 1 | 15° 4 | 6° 0 | 18°40 | 22°35 | 0° 6 | 11°41 | 28°13 | 28° 0 | 20°57 | 18°48 | F 21 |
| S 22 | 19 58 50 | 29°11'46 | 7 ⁵³ | 21°21 | 25°15 | 15°42 | 6°11 | 18°36 | 22°37 | 0° 8 | 11°40 | 28° 3 | 27°57 | 21° 3 | 18°46 | S 22 |
| S 23 | 20 2 47 | 0 ⁹⁰¹ | 21°19 | 21°31 | 26°29 | 16°20 | 6°23 | 18°32 | 22°40 | 0° 9 | 11°39 | 27°51 | 27°54 | 21°10 | 18°43 | S 23 |
| M24 | 20 6 43 | 1° 6'17 | 5 ⁵ | 21°R35 | 27°42 | 16°58 | 6°34 | 18°28 | 22°43 | 0°10 | 11°38 | 27°39 | 27°51 | 21°16 | 18°41 | M24 |
| T 25 | 20 10 40 | 2° 3'34 | 19° 5 | 21°34 | 28°56 | 17°36 | 6°46 | 18°24 | 22°45 | 0°12 | 11°37 | 27°28 | 27°48 | 21°23 | 18°38 | T 25 |
| W26 | 20 14 37 | 3° 0'51 | 3 ¹⁷ | 21°29 | 0 ¹⁰¹ | 18°13 | 6°58 | 18°20 | 22°48 | 0°13 | 11°37 | 27°19 | 27°45 | 21°30 | 18°36 | W26 |
| T 27 | 20 18 33 | 3°58'09 | 17°34 | 21°18 | 1°24 | 18°51 | 7°10 | 18°15 | 22°51 | 0°14 | 11°36 | 27°12 | 27°41 | 21°36 | 18°34 | T 27 |
| F 28 | 20 22 30 | 4°55'28 | 1 ⁵² | 21° 3 | 2°38 | 19°29 | 7°22 | 18°11 | 22°54 | 0°15 | 11°35 | 27° 8 | 27°38 | 21°43 | 18°32 | F 28 |
| S 29 | 20 26 26 | 5°52'47 | 16° 8 | 20°42 | 3°52 | 20° 7 | 7°33 | 18° 7 | 22°56 | 0°17 | 11°34 | 27° 6 | 27°35 | 21°50 | 18°30 | S 29 |
| S 30 | 20 30 23 | 6°50'08 | 0 ⁸²⁰ | 20°17 | 5° 6 | 20°45 | 7°45 | 18° 3 | 22°59 | 0°18 | 11°33 | 27° 6 | 27°32 | 21°56 | 18°28 | S 30 |
| M31 | 20 34 19 | 7 ⁴⁷³⁰ | 14 ⁸²⁵ | 19 ⁴⁷ | 6 ¹²⁰ | 21 ²²³ | 7 ⁵⁷ | 17 ⁵⁸ | 23 ² | 0 ¹¹⁹ | 11 ³² | 27 ⁶ | 27 ²⁹ | 22 ³ | 18 ²⁶ | M31 |

Delta T = 75.02 sec

AUGUST 2051

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|-------------------|------------------|------------------|------------------|-----------------|------------------|------------------|------------------|-----------------|------------------|------------------|------------------|------------------|------------------|------|
| T 1 | 20 38 16 | 8 ⁴⁴⁵³ | 28 ²³ | 19°R14 | 7 ³⁴ | 22 ¹ | 8 ⁹ | 17°R54 | 23 ⁵ | 0 ²⁰ | 11°R31 | 27°R 5 | 27 ²⁶ | 22 ¹⁰ | 18°R24 | T 1 |
| W 2 | 20 42 12 | 9°42'17 | 12 ¹¹ | 18 ³⁶ | 8°48 | 22°39 | 8°22 | 17 ⁴⁹ | 23° 8 | 0°21 | 11 ³⁰ | 27 ² | 27°22 | 22°16 | 18 ²² | W 2 |
| T 3 | 20 46 9 | 10°39'43 | 25°56 | 17°56 | 10° 2 | 23°17 | 8°34 | 17°45 | 23°11 | 0°22 | 11°29 | 26°56 | 27°19 | 22°23 | 18°21 | T 3 |
| F 4 | 20 50 6 | 11°37'09 | 9 ³⁰ | 17°12 | 11°16 | 23°55 | 8°46 | 17°40 | 23°14 | 0°23 | 11°28 | 26°47 | 27°16 | 22°30 | 18°19 | F 4 |
| S 5 | 20 54 2 | 12°34'37 | 22°51 | 16°27 | 12°30 | 24°33 | 8°58 | 17°36 | 23°17 | 0°24 | 11°26 | 26°37 | 27°13 | 22°36 | 18°18 | S 5 |
| S 6 | 20 57 59 | 13°32'05 | 6 ⁰ | 15°41 | 13°44 | 25°11 | 9°11 | 17°32 | 23°20 | 0°25 | 11°25 | 26°25 | 27°10 | 22°43 | 18°16 | S 6 |
| M 7 | 21 1 55 | 14°29'34 | 18°54 | 14°54 | 14°58 | 25°49 | 9°23 | 17°27 | 23°23 | 0°26 | 11°24 | 26°13 | 27° 6 | 22°50 | 18°15 | M 7 |
| T 8 | 21 5 52 | 15°27'05 | 1 ³³ | 14° 8 | 16°12 | 26°27 | 9°35 | 17°23 | 23°27 | 0°27 | 11°23 | 26° 2 | 27° 3 | 22°56 | 18°14 | T 8 |
| W 9 | 21 9 48 | 16°24'36 | 13°56 | 13°24 | 17°26 | 27° 5 | 9°48 | 17°18 | 23°30 | 0°27 | 11°22 | 25°53 | 27° 0 | 23° 3 | 18°13 | W 9 |
| T 10 | 21 13 45 | 17°22'08 | 26° 6 | 12°41 | 18°40 | 27°43 | 10° 0 | 17°14 | 23°33 | 0°28 | 11°21 | 25°47 | 26°57 | 23° 9 | 18°12 | T 10 |
| F 11 | 21 17 41 | 18°19'41 | 8 ⁵ | 12° 2 | 19°54 | 28°21 | 10°13 | 17° 9 | 23°36 | 0°29 | 11°20 | 25°43 | 26°54 | 23°16 | 18°11 | F 11 |
| S 12 | 21 21 38 | 19°17'15 | 19°55 | 11°26 | 21° 8 | 28°59 | 10°25 | 17° 5 | 23°39 | 0°30 | 11°19 | 25°42 | 26°51 | 23°23 | 18°10 | S 12 |
| S 13 | 21 25 35 | 20°14'50 | 1 ⁴³ | 10°56 | 22°23 | 29°37 | 10°38 | 17° 0 | 23°43 | 0°30 | 11°18 | 25°D42 | 26°47 | 23°29 | 18° 9 | S 13 |
| M14 | 21 29 31 | 21°12'26 | 13°32 | 10°30 | 23°37 | 0 ¹⁵ | 10°50 | 16°56 | 23°46 | 0°31 | 11°16 | 25°42 | 26°44 | 23°36 | 18° 8 | M14 |
| T 15 | 21 33 28 | 22°10'03 | 25°28 | 10°11 | 24°51 | 0°54 | 11° 3 | 16°51 | 23°49 | 0°32 | 11°15 | 25°R42 | 26°41 | 23°43 | 18° 8 | T 15 |
| W16 | 21 37 24 | 23° 7'41 | 7 ³⁶ | 9°57 | 26° 5 | 1°32 | 11°16 | 16°47 | 23°53 | 0°32 | 11°14 | 25°41 | 26°38 | 23°49 | 18° 7 | W16 |
| T 17 | 21 41 21 | 24° 5'20 | 20° 2 | 9°D51 | 27°19 | 2°10 | 11°28 | 16°42 | 23°56 | 0°33 | 11°13 | 25°38 | 26°35 | 23°56 | 18° 7 | T 17 |
| F 18 | 21 45 17 | 25° 3'00 | 2 ⁴⁹ | 9°52 | 28°34 | 2°48 | 11°41 | 16°38 | 24° 0 | 0°34 | 11°12 | 25°33 | 26°31 | 24° 3 | 18° 6 | F 18 |
| S 19 | 21 49 14 | 26° 0'41 | 16° 1 | 10° 0 | 29°48 | 3°26 | 11°54 | 16°33 | 24° 3 | 0°34 | 11°10 | 25°26 | 26°28 | 24° 9 | 18° 6 | S 19 |
| S 20 | 21 53 10 | 26°58'23 | 29°38 | 10°15 | 1 ² | 4° 4 | 12° 6 | 16°29 | 24° 6 | 0°35 | 11° 9 | 25°17 | 26°25 | 24°16 | 18° 6 | S 20 |
| M21 | 21 57 7 | 27°56'06 | 13 ³⁹ | 10°38 | 2°16 | 4°42 | 12°19 | 16°25 | 24°10 | 0°35 | 11° 8 | 25° 8 | 26°22 | 24°23 | 18°D 6 | M21 |
| T 22 | 22 1 4 | 28°53'50 | 28° 0 | 11° 9 | 3°30 | 5°20 | 12°32 | 16°20 | 24°13 | 0°35 | 11° 7 | 24°59 | 26°19 | 24°29 | 18° 6 | T 22 |
| W23 | 22 5 0 | 29°51'36 | 12 ³⁵ | 11°47 | 4°45 | 5°58 | 12°45 | 16°16 | 24°17 | 0°36 | 11° 6 | 24°52 | 26°16 | 24°36 | 18° 6 | W23 |
| T 24 | 22 8 57 | 0 ⁴⁹²⁴ | 27°17 | 12°32 | 5°59 | 6°36 | 12°58 | 16°12 | 24°20 | 0°36 | 11° 4 | 24°47 | 26°12 | 24°42 | 18° 7 | T 24 |
| F 25 | 22 12 53 | 1°47'12 | 11 ⁵⁹ | 13°25 | 7°13 | 7°15 | 13°10 | 16° 7 | 24°24 | 0°37 | 11° 3 | 24°44 | 26° 9 | 24°49 | 18° 7 | F 25 |
| S 26 | 22 16 50 | 2°45'03 | 26°35 | 14°24 | 8°27 | 7°53 | 13°23 | 16° 3 | 24°28 | 0°37 | 11° 2 | 24°D43 | 26° 6 | 24°56 | 18° 7 | S 26 |
| S 27 | 22 20 46 | 3°42'55 | 11 ⁸ | 0 15°30 | 9°42 | 8°31 | 13°36 | 15°59 | 24°31 | 0°37 | 11° 1 | 24°44 | 26° 3 | 25° 2 | 18° 8 | S 27 |
| M28 | 22 24 43 | 4°40'49 | 25°12 | 16°42 | 10°56 | 9° 9 | 13°49 | 15°55 | 24°35 | 0°37 | 10°59 | 24°45 | 26° 0 | 25° 9 | 18° 8 | M28 |
| T 29 | 22 28 39 | 5°38'46 | 9 ⁹ | 18° 1 | 12°10 | 9°47 | 14° 2 | 15°51 | 24°38 | 0°37 | 10°58 | 24°R45 | 25°57 | 25°16 | 18° 9 | T 29 |
| W30 | 22 32 36 | 6°36'44 | 22°51 | 19°25 | 13°25 | 10°25 | 14°15 | 15°47 | 24°42 | 0°38 | 10°57 | 24°44 | 25°53 | 25°22 | 18°10 | W30 |
| T 31 | 22 36 32 | 7 ³⁴⁴³ | 6 ¹⁸ | 20 ⁵⁴ | 14 ³⁹ | 11 ⁴ | 14 ²⁸ | 15 ⁴³ | 24 ⁴⁶ | 0 ³⁸ | 10 ⁵⁶ | 24 ⁴¹ | 25 ⁵⁰ | 25 ²⁹ | 18 ¹¹ | T 31 |

Delta T = 75.05 sec

ASTRODIENST EPHEMERIS for the year 2051

geocentric

SEPTEMBER 2051

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------------|--------------------|--------------------|---------------------|---------------------|---------------------|------|
| F 1 | 22 40 29 | 8 ^h 32'45 | 19 ^h 32' | 22 ^h 02' | 15 ^h 53' | 11 ^h 42' | 14 ^h 41' | 15°R39 | 24 ^h 49' | 0 ^h 38' | 10°R54 | 24°R36 | 25 ^h 47' | 25 ^h 36' | 18 ^h 12' | F 1 |
| S 2 | 22 44 26 | 9°30'49 | 2 ^h 02' | 24° 5 | 17° 8 | 12°20 | 14°54 | 15 ^h 35' | 24°53 | 0°38 | 10 ^h 53 | 24 ^h 29 | 25°44 | 25°42 | 18°13 | S 2 |
| S 3 | 22 48 22 | 10°28'54 | 15°19 | 25°47 | 18°22 | 12°58 | 15° 7 | 15°31 | 24°57 | 0°R38 | 10°52 | 24°21 | 25°41 | 25°49 | 18°14 | S 3 |
| M 4 | 22 52 19 | 11°27'01 | 27°54 | 27°32 | 19°37 | 13°37 | 15°20 | 15°27 | 25° 0 | 0°38 | 10°51 | 24°13 | 25°37 | 25°56 | 18°15 | M 4 |
| T 5 | 22 56 15 | 12°25'09 | 10 ^h 17 | 29°19 | 20°51 | 14°15 | 15°33 | 15°23 | 25° 4 | 0°38 | 10°49 | 24° 6 | 25°34 | 26° 2 | 18°16 | T 5 |
| W 6 | 23 0 12 | 13°23'20 | 22°28 | 1 ^h 09 | 22° 5 | 14°53 | 15°46 | 15°20 | 25° 8 | 0°38 | 10°48 | 24° 1 | 25°31 | 26° 9 | 18°18 | W 6 |
| T 7 | 23 4 8 | 14°21'32 | 4 ^h 29 | 3° 0 | 23°20 | 15°32 | 15°59 | 15°16 | 25°12 | 0°38 | 10°47 | 23°57 | 25°28 | 26°15 | 18°19 | T 7 |
| F 8 | 23 8 5 | 15°19'46 | 16°22 | 4°53 | 24°34 | 16°10 | 16°12 | 15°12 | 25°15 | 0°38 | 10°45 | 23°55 | 25°25 | 26°22 | 18°21 | F 8 |
| S 9 | 23 12 1 | 16°18'01 | 28°10 | 6°47 | 25°49 | 16°48 | 16°25 | 15° 9 | 25°19 | 0°37 | 10°44 | 23°D55 | 25°22 | 26°29 | 18°23 | S 9 |
| S 10 | 23 15 58 | 17°16'18 | 9 ^h 56 | 8°41 | 27° 3 | 17°27 | 16°38 | 15° 5 | 25°23 | 0°37 | 10°43 | 23°56 | 25°18 | 26°35 | 18°24 | S 10 |
| M 11 | 23 19 55 | 18°14'36 | 21°45 | 10°36 | 28°17 | 18° 5 | 16°51 | 15° 2 | 25°27 | 0°37 | 10°42 | 23°57 | 25°15 | 26°42 | 18°26 | M 11 |
| T 12 | 23 23 51 | 19°12'56 | 3 ^h 40 | 12°31 | 29°32 | 18°43 | 17° 4 | 14°59 | 25°30 | 0°37 | 10°40 | 23°59 | 25°12 | 26°49 | 18°28 | T 12 |
| W 13 | 23 27 48 | 20°11'18 | 15°47 | 14°26 | 0 ^h 46 | 19°22 | 17°17 | 14°55 | 25°34 | 0°36 | 10°39 | 24°R 0 | 25° 9 | 26°55 | 18°30 | W 13 |
| T 14 | 23 31 44 | 21° 9'42 | 28°10 | 16°20 | 2° 1 | 20° 0 | 17°30 | 14°52 | 25°38 | 0°36 | 10°38 | 24° 0 | 25° 6 | 27° 2 | 18°33 | T 14 |
| F 15 | 23 35 41 | 22° 8'06 | 10 ^h 55 | 18°15 | 3°15 | 20°39 | 17°43 | 14°49 | 25°42 | 0°36 | 10°37 | 23°58 | 25° 3 | 27° 9 | 18°35 | F 15 |
| S 16 | 23 39 37 | 23° 6'33 | 24° 5 | 20° 8 | 4°30 | 21°17 | 17°56 | 14°46 | 25°45 | 0°35 | 10°36 | 23°56 | 24°59 | 27°15 | 18°37 | S 16 |
| S 17 | 23 43 34 | 24° 5'01 | 7 ^h 42 | 22° 1 | 5°44 | 21°55 | 18° 9 | 14°43 | 25°49 | 0°35 | 10°34 | 23°52 | 24°56 | 27°22 | 18°39 | S 17 |
| M 18 | 23 47 30 | 25° 3'31 | 21°46 | 23°53 | 6°58 | 22°34 | 18°22 | 14°40 | 25°53 | 0°34 | 10°33 | 23°48 | 24°53 | 27°29 | 18°42 | M 18 |
| T 19 | 23 51 27 | 26° 2'02 | 6 ^h 15 | 25°44 | 8°13 | 23°12 | 18°35 | 14°37 | 25°57 | 0°34 | 10°32 | 23°43 | 24°50 | 27°35 | 18°45 | T 19 |
| W 20 | 23 55 24 | 27° 0'35 | 21° 4 | 27°34 | 9°27 | 23°51 | 18°48 | 14°35 | 26° 1 | 0°33 | 10°31 | 23°40 | 24°47 | 27°42 | 18°47 | W 20 |
| T 21 | 23 59 20 | 27°59'10 | 6 ^h 9 | 29°24 | 10°42 | 24°29 | 19° 1 | 14°32 | 26° 4 | 0°33 | 10°29 | 23°38 | 24°43 | 27°48 | 18°50 | T 21 |
| F 22 | 0 3 17 | 28°57'47 | 21° 8 | 1 ^h 12 | 11°56 | 25° 8 | 19°14 | 14°30 | 26° 8 | 0°32 | 10°28 | 23°D37 | 24°40 | 27°55 | 18°53 | F 22 |
| S 23 | 0 7 13 | 29°56'26 | 6 ^h 8 | 3° 0 | 13°11 | 25°46 | 19°27 | 14°27 | 26°12 | 0°32 | 10°27 | 23°38 | 24°37 | 28° 2 | 18°56 | S 23 |
| S 24 | 0 11 10 | 0 ^h 55'07 | 20°51 | 4°46 | 14°25 | 26°25 | 19°40 | 14°25 | 26°16 | 0°31 | 10°26 | 23°39 | 24°34 | 28° 8 | 18°59 | S 24 |
| M 25 | 0 15 6 | 1°53'51 | 5 ^h 11 | 6°32 | 15°39 | 27° 4 | 19°52 | 14°22 | 26°20 | 0°30 | 10°25 | 23°40 | 24°31 | 28°15 | 19° 2 | M 25 |
| T 26 | 0 19 3 | 2°52'37 | 19°24 | 8°17 | 16°54 | 27°42 | 20° 5 | 14°20 | 26°23 | 0°30 | 10°24 | 23°41 | 24°28 | 28°22 | 19° 5 | T 26 |
| W 27 | 0 22 59 | 3°51'25 | 3 ^h 59 | 10° 0 | 18° 8 | 28°21 | 20°18 | 14°18 | 26°27 | 0°29 | 10°22 | 23°R42 | 24°24 | 28°28 | 19° 8 | W 27 |
| T 28 | 0 26 56 | 4°50'15 | 16°31 | 11°43 | 19°23 | 28°59 | 20°31 | 14°16 | 26°31 | 0°28 | 10°21 | 23°41 | 24°21 | 28°35 | 19°11 | T 28 |
| F 29 | 0 30 52 | 5°49'08 | 29°35 | 13°25 | 20°37 | 29°38 | 20°44 | 14°14 | 26°35 | 0°27 | 10°20 | 23°40 | 24°18 | 28°42 | 19°15 | F 29 |
| S 30 | 0 34 49 | 6 ^h 48'03 | 12 ^h 21 | 15 ^h 6 | 21 ^h 52 | 0 ^h 17 | 20 ^h 56 | 14 ^h 12 | 26 ^h 38 | 0 ^h 26 | 10 ^h 19 | 23 ^h 38 | 24 ^h 15 | 28 ^h 48 | 19 ^h 18 | S 30 |

Delta T = 75.07 sec

OCTOBER 2051

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|---------|----------------------|--------------------|--------------------|-------------------|--------------------|--------------------|-------------------|--------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|------|
| S 1 | 0 38 46 | 7 ^h 47'00 | 24 ^h 52 | 16 ^h 46 | 23 ^h 6 | 0 ^h 55 | 21 ^h 09 | 14°R10 | 26 ^h 42 | 0°R25 | 10°R18 | 23°R36 | 24 ^h 12 | 28 ^h 55 | 19 ^h 22 | S 1 |
| M 2 | 0 42 42 | 8°45'59 | 7 ^h 10 | 18°25 | 24°21 | 1°34 | 21°22 | 14 ^h 9 | 26°46 | 0 ^h 25 | 10 ^h 17 | 23 ^h 33 | 24° 8 | 29° 2 | 19°25 | M 2 |
| T 3 | 0 46 39 | 9°45'01 | 19°18 | 20° 3 | 25°35 | 2°13 | 21°35 | 14° 7 | 26°50 | 0°24 | 10°16 | 23°31 | 24° 5 | 29° 8 | 19°29 | T 3 |
| W 4 | 0 50 35 | 10°44'04 | 1 ^h 17 | 21°40 | 26°50 | 2°52 | 21°47 | 14° 6 | 26°53 | 0°23 | 10°15 | 23°30 | 24° 2 | 29°15 | 19°33 | W 4 |
| T 5 | 0 54 32 | 11°43'10 | 13°11 | 23°17 | 28° 4 | 3°30 | 22° 0 | 14° 4 | 26°57 | 0°22 | 10°14 | 23°29 | 23°59 | 29°22 | 19°37 | T 5 |
| F 6 | 0 58 28 | 12°42'18 | 24°59 | 24°52 | 29°19 | 4° 9 | 22°13 | 14° 3 | 27° 1 | 0°21 | 10°13 | 23°D29 | 23°56 | 29°28 | 19°41 | F 6 |
| S 7 | 1 2 25 | 13°41'27 | 6 ^h 46 | 26°27 | 0 ^h 33 | 4°48 | 22°25 | 14° 2 | 27° 4 | 0°20 | 10°12 | 23°29 | 23°53 | 29°35 | 19°45 | S 7 |
| S 8 | 1 6 21 | 14°40'39 | 18°33 | 28° 2 | 1°47 | 5°27 | 22°38 | 14° 1 | 27° 8 | 0°19 | 10°11 | 23°30 | 23°49 | 29°41 | 19°49 | S 8 |
| M 9 | 1 10 18 | 15°39'53 | 0 ^h 24 | 29°35 | 3° 2 | 6° 6 | 22°50 | 14° 0 | 27°12 | 0°18 | 10°10 | 23°31 | 23°46 | 29°48 | 19°53 | M 9 |
| T 10 | 1 14 15 | 16°39'08 | 12°21 | 1 ^h 11 | 4°16 | 6°45 | 23° 3 | 13°59 | 27°15 | 0°16 | 10° 9 | 23°31 | 23°43 | 29°55 | 19°57 | T 10 |
| W 11 | 1 18 11 | 17°38'25 | 24°28 | 2°39 | 5°31 | 7°23 | 23°15 | 13°58 | 27°19 | 0°15 | 10° 8 | 23°32 | 23°40 | 0 ^h 1 | 20° 1 | W 11 |
| T 12 | 1 22 8 | 18°37'44 | 6 ^h 50 | 4°10 | 6°45 | 8° 2 | 23°27 | 13°57 | 27°22 | 0°14 | 10° 7 | 23°32 | 23°37 | 0° 8 | 20° 6 | T 12 |
| F 13 | 1 26 4 | 19°37'05 | 19°31 | 5°41 | 8° 0 | 8°41 | 23°40 | 13°57 | 27°26 | 0°13 | 10° 6 | 23°R33 | 23°34 | 0°15 | 20°10 | F 13 |
| S 14 | 1 30 1 | 20°36'28 | 2 ^h 34 | 7°10 | 9°14 | 9°20 | 23°52 | 13°56 | 27°30 | 0°12 | 10° 5 | 23°32 | 23°30 | 0°21 | 20°15 | S 14 |
| S 15 | 1 33 57 | 21°35'52 | 16° 3 | 8°39 | 10°29 | 9°59 | 24° 4 | 13°56 | 27°33 | 0°11 | 10° 4 | 23°32 | 23°27 | 0°28 | 20°19 | S 15 |
| M 16 | 1 37 54 | 22°35'18 | 29°59 | 10° 7 | 11°43 | 10°38 | 24°16 | 13°55 | 27°37 | 0° 9 | 10° 3 | 23°32 | 23°24 | 0°35 | 20°24 | M 16 |
| T 17 | 1 41 50 | 23°34'46 | 14 ^h 21 | 11°35 | 12°58 | 11°17 | 24°29 | 13°55 | 27°40 | 0° 8 | 10° 2 | 23°D32 | 23°21 | 0°41 | 20°29 | T 17 |
| W 18 | 1 45 47 | 24°34'15 | 29° 7 | 13° 1 | 14°12 | 11°56 | 24°41 | 13°D55 | 27°44 | 0° 7 | 10° 1 | 23°32 | 23°18 | 0°48 | 20°33 | W 18 |
| T 19 | 1 49 44 | 25°33'47 | 14 ^h 11 | 14°27 | 15°26 | 12°35 | 24°53 | 13°55 | 27°47 | 0° 5 | 10° 1 | 23°32 | 23°14 | 0°55 | 20°38 | T 19 |
| F 20 | 1 53 40 | 26°33'20 | 29°24 | 15°52 | 16°41 | 13°14 | 25° 5 | 13°55 | 27°51 | 0° 4 | 10° 0 | 23°R32 | 23°11 | 1° 1 | 20°43 | F 20 |
| S 21 | 1 57 37 | 27°32'56 | 14 ^h 36 | 17°16 | 17°55 | 13°53 | 25°17 | 13°55 | 27°54 | 0° 3 | 9°59 | 23°32 | 23° 8 | 1° 8 | 20°48 | S 21 |
| S 22 | 2 1 33 | 28°32'33 | 29°39 | 18°40 | 19°10 | 14°32 | 25°29 | 13°56 | 27°57 | 0° 1 | 9°58 | 23°32 | 23° 5 | 1°14 | 20°53 | S 22 |
| M 23 | 2 5 30 | 29°32'13 | 14 ^h 24 | 20° 2 | 20°24 | 15°11 | 25°40 | 13°56 | 28° 1 | 29°59 | 9°58 | 23°31 | 23° 2 | 1°21 | 20°58 | M 23 |
| T 24 | 2 9 26 | 0 ^h 31'55 | 28°45 | 21°23 | 21°38 | 15°51 | 25°52 | 13°57 | 28° 4 | 29°59 | 9°57 | 23°30 | 22°59 | 1°28 | 21° 3 | T 24 |
| W 25 | 2 13 23 | 1°31'40 | 12 ^h 40 | 22°44 | 22°53 | 16°30 | 26° 4 | 13°57 | 28° 8 | 29°57 | 9°56 | 23°30 | 22°55 | 1°34 | 21° 8 | W 25 |
| T 26 | 2 17 19 | 2°31'26 | 26° 7 | 24° 3 | 24° 7 | 17° 9 | 26°16 | 13°58 | 28°11 | 29°56 | 9°55 | 23°29 | 22°52 | 1°41 | 21°13 | T 26 |
| F 27 | 2 21 16 | 3°31'15 | 9 ^h 10 | 25°21 | 25°22 | 17°48 | 26°27 | 13°59 | 28°14 | 29°54 | 9°55 | 23°D29 | 22°49 | 1°48 | 21°19 | F 27 |
| S 28 | 2 25 13 | 4°31'06 | 21°51 | 26°38 | 26°36 | 18°27 | 26°39 | 14° 0 | 28°17 | 29°53 | 9°54 | 23°30 | 22°46 | 1°54 | 21°24 | S 28 |
| S 29 | 2 29 9 | 5°30'59 | 4 ^h 14 | 27°54 | 27°50 | 19° 7 | 26°50 | 14° 1 | 28°21 | 29°51 | 9°54 | 23°31 | 22°43 | 2° 1 | 21°29 | S 29 |
| M 30 | 2 33 6 | 6°30'54 | 16°22 | 29° 8 | 29° 5 | 19°46 | 27° 2 | 14° 2 | 28°24 | 29°50 | 9°53 | 23°32 | 22°39 | 2° 8 | 21°35 | M 30 |
| T 31 | 2 37 2 | 7 ^h 30'52 | 28 ^h 20 | 0 ^h 20 | 0 ^h 19 | 20 ^h 25 | 27 ^h 13 | 14 ^h 3 | 28 ^h 27 | 29°58 | 9 ^h 52 | 23 ^h 33 | 22 ^h 36 | 2 ^h 14 | 21 ^h 40 | T 31 |

Delta T = 75.09 sec

ASTRODIENST EPHEMERIS for the year 2051

geocentric

NOVEMBER 2051

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|---------|----------|-------|--------|-------|-------|-------|-------|-------|-------|-------|--------|-------|------|-------|------|
| W 1 | 2 40 59 | 8♉30'51 | 10♊12 | 1♈31 | 1♈34 | 21♉5 | 27♏24 | 14♋4 | 28♏30 | 29♏47 | 9♏52 | 23♎34 | 22♎33 | 2♉21 | 21♈46 | W 1 |
| T 2 | 2 44 55 | 9°30'53 | 21°59 | 2°39 | 2°48 | 21°44 | 27°35 | 14°6 | 28°33 | 29♏45 | 9♏51 | 23°R35 | 22°30 | 2°28 | 21°52 | T 2 |
| F 3 | 2 48 52 | 10°30'56 | 3♉46 | 3°46 | 4°2 | 22°23 | 27°47 | 14°7 | 28°36 | 29°44 | 9°51 | 23°34 | 22°27 | 2°34 | 21°57 | F 3 |
| S 4 | 2 52 48 | 11°31'02 | 15°35 | 4°50 | 5°17 | 23°3 | 27°58 | 14°9 | 28°39 | 29°42 | 9°50 | 23°33 | 22°24 | 2°41 | 22°3 | S 4 |
| S 5 | 2 56 45 | 12°31'09 | 27°27 | 5°51 | 6°31 | 23°42 | 28°9 | 14°11 | 28°42 | 29°40 | 9°50 | 23°31 | 22°20 | 2°48 | 22°9 | S 5 |
| M 6 | 3 0 41 | 13°31'18 | 9♊24 | 6°49 | 7°45 | 24°22 | 28°20 | 14°12 | 28°45 | 29°39 | 9°49 | 23°28 | 22°17 | 2°54 | 22°14 | M 6 |
| T 7 | 3 4 38 | 14°31'29 | 21°29 | 7°44 | 9°0 | 25°1 | 28°30 | 14°14 | 28°48 | 29°37 | 9°49 | 23°24 | 22°14 | 3°1 | 22°20 | T 7 |
| W 8 | 3 8 35 | 15°31'41 | 3♊43 | 8°34 | 10°14 | 25°41 | 28°41 | 14°16 | 28°51 | 29°35 | 9°49 | 23°21 | 22°11 | 3°7 | 22°26 | W 8 |
| T 9 | 3 12 31 | 16°31'55 | 16°10 | 9°21 | 11°28 | 26°20 | 28°52 | 14°19 | 28°54 | 29°34 | 9°48 | 23°18 | 22°8 | 3°14 | 22°32 | T 9 |
| F 10 | 3 16 28 | 17°32'11 | 28°51 | 10°3 | 12°43 | 27°0 | 29°2 | 14°21 | 28°57 | 29°32 | 9°48 | 23°15 | 22°5 | 3°21 | 22°38 | F 10 |
| S 11 | 3 20 24 | 18°32'28 | 11♋51 | 10°39 | 13°57 | 27°39 | 29°13 | 14°23 | 29°0 | 29°31 | 9°48 | 23°14 | 22°1 | 3°27 | 22°44 | S 11 |
| S 12 | 3 24 21 | 19°32'46 | 25°11 | 11°10 | 15°11 | 28°19 | 29°23 | 14°26 | 29°2 | 29°29 | 9°47 | 23°D14 | 21°58 | 3°34 | 22°50 | S 12 |
| M13 | 3 28 17 | 20°33'06 | 8♋54 | 11°33 | 16°26 | 28°59 | 29°34 | 14°28 | 29°5 | 29°27 | 9°47 | 23°15 | 21°55 | 3°41 | 22°56 | M13 |
| T 14 | 3 32 14 | 21°33'27 | 23°0 | 11°50 | 17°40 | 29°38 | 29°44 | 14°31 | 29°8 | 29°26 | 9°47 | 23°16 | 21°52 | 3°47 | 23°2 | T 14 |
| W15 | 3 36 10 | 22°33'49 | 7♏30 | 11°R58 | 18°54 | 0♉18 | 29°54 | 14°33 | 29°10 | 29°24 | 9°46 | 23°18 | 21°49 | 3°54 | 23°8 | W15 |
| T 16 | 3 40 7 | 23°34'13 | 22°20 | 11°58 | 20°8 | 0°57 | 0♊4 | 14°36 | 29°13 | 29°22 | 9°46 | 23°R18 | 21°45 | 4°1 | 23°14 | T 16 |
| F 17 | 3 44 4 | 24°34'39 | 7♏24 | 11°48 | 21°23 | 1°37 | 0°14 | 14°39 | 29°15 | 29°20 | 9°46 | 23°18 | 21°42 | 4°7 | 23°21 | F 17 |
| S 18 | 3 48 0 | 25°35'05 | 22°34 | 11°28 | 22°37 | 2°17 | 0°24 | 14°42 | 29°18 | 29°19 | 9°46 | 23°16 | 21°39 | 4°14 | 23°27 | S 18 |
| S 19 | 3 51 57 | 26°35'34 | 7♉41 | 10°58 | 23°51 | 2°57 | 0°33 | 14°45 | 29°20 | 29°17 | 9°46 | 23°12 | 21°36 | 4°21 | 23°33 | S 19 |
| M20 | 3 55 53 | 27°36'04 | 22°35 | 10°17 | 25°5 | 3°36 | 0°43 | 14°48 | 29°23 | 29°15 | 9°46 | 23°7 | 21°33 | 4°27 | 23°39 | M20 |
| T 21 | 3 59 50 | 28°36'36 | 7♏7 | 9°26 | 26°20 | 4°16 | 0°53 | 14°52 | 29°25 | 29°14 | 9°46 | 23°1 | 21°30 | 4°34 | 23°46 | T 21 |
| W22 | 4 3 46 | 29°37'10 | 21°13 | 8°25 | 27°34 | 4°56 | 1°2 | 14°55 | 29°28 | 29°12 | 9°46 | 22°56 | 21°26 | 4°41 | 23°52 | W22 |
| T 23 | 4 7 43 | 0♊37'45 | 4♊21 | 7°17 | 28°48 | 5°36 | 1°11 | 14°58 | 29°30 | 29°10 | 9°46 | 22°52 | 21°23 | 4°47 | 23°59 | T 23 |
| F 24 | 4 11 39 | 1°38'22 | 17°59 | 6°1 | 0°3 | 6°16 | 1°21 | 15°2 | 29°32 | 29°9 | 9°D46 | 22°49 | 21°20 | 4°54 | 24°5 | F 24 |
| S 25 | 4 15 36 | 2°39'00 | 0♏43 | 4°41 | 1°16 | 6°56 | 1°30 | 15°5 | 29°34 | 29°7 | 9°46 | 22°D48 | 21°17 | 5°0 | 24°11 | S 25 |
| S 26 | 4 19 33 | 3°39'40 | 13°5 | 3°19 | 2°30 | 7°36 | 1°39 | 15°9 | 29°37 | 29°5 | 9°46 | 22°48 | 21°14 | 5°7 | 24°18 | S 26 |
| M27 | 4 23 29 | 4°40'22 | 25°10 | 1°58 | 3°45 | 8°16 | 1°47 | 15°13 | 29°39 | 29°4 | 9°46 | 22°50 | 21°11 | 5°14 | 24°24 | M27 |
| T 28 | 4 27 26 | 5°41'05 | 7♊5 | 0°40 | 4°59 | 8°56 | 1°56 | 15°17 | 29°41 | 29°2 | 9°46 | 22°51 | 21°7 | 5°20 | 24°31 | T 28 |
| W29 | 4 31 22 | 6°41'50 | 18°52 | 29♉28 | 6°13 | 9°36 | 2°5 | 15°21 | 29°43 | 29°0 | 9°46 | 22°R52 | 21°4 | 5°27 | 24°37 | W29 |
| T 30 | 4 35 19 | 7♊42'37 | 0♉38 | 28♉25 | 7♏27 | 10♉16 | 2♊13 | 15°25 | 29♏45 | 28♏58 | 9♋46 | 22°52 | 21♊1 | 5♉34 | 24°44 | T 30 |

Delta T = 75.12 sec

DECEMBER 2051

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|---------|----------|-------|--------|-------|-------|------|-------|-------|--------|------|--------|-------|------|-------|------|
| F 1 | 4 39 15 | 8♊43'25 | 12♉26 | 27°R31 | 8♏41 | 10♉56 | 2♊22 | 15°29 | 29♏47 | 28°R57 | 9♋46 | 22°R50 | 20♊58 | 5♉40 | 24♊51 | F 1 |
| S 2 | 4 43 12 | 9°44'14 | 24°19 | 26♉48 | 9°55 | 11°36 | 2°30 | 15°33 | 29°49 | 28♏55 | 9°46 | 22°45 | 20°55 | 5°47 | 24°57 | S 2 |
| S 3 | 4 47 8 | 10°45'05 | 6♊19 | 26°16 | 11°9 | 12°16 | 2°38 | 15°37 | 29°50 | 28°54 | 9°47 | 22°39 | 20°51 | 5°54 | 25°4 | S 3 |
| M 4 | 4 51 5 | 11°45'56 | 18°27 | 25°56 | 12°23 | 12°56 | 2°46 | 15°42 | 29°52 | 28°52 | 9°47 | 22°30 | 20°48 | 6°0 | 25°10 | M 4 |
| T 5 | 4 55 2 | 12°46'49 | 0♊46 | 25°D47 | 13°37 | 13°36 | 2°54 | 15°46 | 29°54 | 28°50 | 9°47 | 22°20 | 20°45 | 6°7 | 25°17 | T 5 |
| W 6 | 4 58 58 | 13°47'43 | 13°15 | 25°49 | 14°51 | 14°16 | 3°2 | 15°51 | 29°55 | 28°49 | 9°48 | 22°10 | 20°42 | 6°14 | 25°24 | W 6 |
| T 7 | 5 2 55 | 14°48'38 | 25°55 | 26°1 | 16°5 | 14°57 | 3°10 | 15°55 | 29°57 | 28°47 | 9°48 | 22°1 | 20°39 | 6°20 | 25°30 | T 7 |
| F 8 | 5 6 51 | 15°49'33 | 8♋48 | 26°22 | 17°19 | 15°37 | 3°17 | 16°0 | 29°59 | 28°45 | 9°48 | 21°53 | 20°36 | 6°27 | 25°37 | F 8 |
| S 9 | 5 10 48 | 16°50'30 | 21°53 | 26°52 | 18°33 | 16°17 | 3°24 | 16°5 | 0♊0 | 28°44 | 9°49 | 21°48 | 20°32 | 6°34 | 25°44 | S 9 |
| S 10 | 5 14 44 | 17°51'27 | 5♋13 | 27°29 | 19°47 | 16°57 | 3°32 | 16°10 | 0°2 | 28°42 | 9°49 | 21°45 | 20°29 | 6°40 | 25°50 | S 10 |
| M11 | 5 18 41 | 18°52'24 | 18°49 | 28°13 | 21°1 | 17°38 | 3°39 | 16°14 | 0°3 | 28°41 | 9°49 | 21°D44 | 20°26 | 6°47 | 25°57 | M11 |
| T 12 | 5 22 37 | 19°53'23 | 2♏42 | 29°2 | 22°15 | 18°18 | 3°46 | 16°19 | 0°4 | 28°39 | 9°50 | 21°45 | 20°23 | 6°54 | 26°4 | T 12 |
| W13 | 5 26 34 | 20°54'21 | 16°53 | 29°57 | 23°29 | 18°58 | 3°53 | 16°24 | 0°6 | 28°37 | 9°50 | 21°R45 | 20°20 | 7°0 | 26°10 | W13 |
| T 14 | 5 30 31 | 21°55'21 | 1♊20 | 0♊56 | 24°42 | 19°39 | 3°59 | 16°30 | 0°7 | 28°36 | 9°51 | 21°45 | 20°17 | 7°7 | 26°17 | T 14 |
| F 15 | 5 34 27 | 22°56'21 | 16°2 | 1°59 | 25°56 | 20°19 | 4°6 | 16°35 | 0°8 | 28°34 | 9°51 | 21°43 | 20°13 | 7°13 | 26°24 | F 15 |
| S 16 | 5 38 24 | 23°57'21 | 0♉53 | 3°6 | 27°10 | 21°0 | 4°12 | 16°40 | 0°9 | 28°33 | 9°52 | 21°38 | 20°10 | 7°20 | 26°31 | S 16 |
| S 17 | 5 42 20 | 24°58'22 | 15°45 | 4°16 | 28°24 | 21°40 | 4°18 | 16°45 | 0°10 | 28°31 | 9°53 | 21°30 | 20°7 | 7°27 | 26°37 | S 17 |
| M18 | 5 46 17 | 25°59'24 | 0♊30 | 5°28 | 29°37 | 22°21 | 4°24 | 16°51 | 0°11 | 28°30 | 9°53 | 21°20 | 20°4 | 7°33 | 26°44 | M18 |
| T 19 | 5 50 13 | 27°0'27 | 15°0 | 6°43 | 0♋51 | 23°1 | 4°30 | 16°56 | 0°12 | 28°29 | 9°54 | 21°10 | 20°1 | 7°40 | 26°51 | T 19 |
| W20 | 5 54 10 | 28°1'30 | 29°8 | 8°0 | 2°4 | 23°42 | 4°36 | 17°2 | 0°13 | 28°27 | 9°54 | 20°59 | 19°57 | 7°47 | 26°58 | W20 |
| T 21 | 5 58 7 | 29°2'34 | 12♊49 | 9°18 | 3°18 | 24°22 | 4°42 | 17°7 | 0°14 | 28°26 | 9°55 | 20°49 | 19°54 | 7°53 | 27°4 | T 21 |
| F 22 | 6 2 3 | 0♊3'38 | 26°4 | 10°38 | 4°32 | 25°3 | 4°47 | 17°13 | 0°15 | 28°24 | 9°56 | 20°42 | 19°51 | 8°0 | 27°11 | F 22 |
| S 23 | 6 6 0 | 1°4'44 | 8♏52 | 11°59 | 5°45 | 25°43 | 4°52 | 17°19 | 0°16 | 28°23 | 9°57 | 20°37 | 19°48 | 8°7 | 27°18 | S 23 |
| S 24 | 6 9 56 | 2°5'50 | 21°17 | 13°22 | 6°58 | 26°24 | 4°57 | 17°24 | 0°16 | 28°22 | 9°57 | 20°35 | 19°45 | 8°13 | 27°24 | S 24 |
| M25 | 6 13 53 | 3°6'56 | 3♊25 | 14°45 | 8°12 | 27°5 | 5°2 | 17°30 | 0°17 | 28°20 | 9°58 | 20°D35 | 19°42 | 8°20 | 27°31 | M25 |
| T 26 | 6 17 49 | 4°8'04 | 15°20 | 16°10 | 9°25 | 27°45 | 5°7 | 17°36 | 0°18 | 28°19 | 9°59 | 20°R35 | 19°38 | 8°27 | 27°38 | T 26 |
| W27 | 6 21 46 | 5°9'12 | 27°8 | 17°35 | 10°39 | 28°26 | 5°12 | 17°42 | 0°18 | 28°18 | 10°0 | 20°35 | 19°35 | 8°33 | 27°44 | W27 |
| T 28 | 6 25 42 | 6°10'20 | 8♉54 | 19°2 | 11°52 | 29°7 | 5°16 | 17°48 | 0°19 | 28°16 | 10°1 | 20°33 | 19°32 | 8°40 | 27°51 | T 28 |
| F 29 | 6 29 39 | 7°11'30 | 20°44 | 20°28 | 13°5 | 29°48 | 5°21 | 17°54 | 0°19 | 28°15 | 10°1 | 20°29 | 19°29 | 8°47 | 27°58 | F 29 |
| S 30 | 6 33 36 | 8°12'39 | 2♊42 | 21°56 | 14°18 | 0♊29 | 5°25 | 18°0 | 0°19 | 28°14 | 10°2 | 20°23 | 19°26 | 8°53 | 28°4 | S 30 |
| S 31 | 6 37 32 | 9♊13'49 | 14♊50 | 23♊24 | 15°32 | 1♊9 | 5♊29 | 18°6 | 0♊20 | 28♊13 | 10♋3 | 20°13 | 19°23 | 9♉0 | 28♊11 | S 31 |

Delta T = 75.14 sec