



Astrodienst Ephemeris Tables for the year 2089

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 2089

geocentric

JANUARY 2089

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|---------|----------|----------|----------|----------|----------|----------|----------|-------|----------|----------|----------|----------|----------|----------|------|
| S 1 | 6 45 35 | 11°17'24 | 6°41' | 16°R59 | 28°12' | 21°R59 | 13°12'29 | 20°R49 | 5°31' | 22°R46 | 21°R28 | 24°R12 | 23°12'39 | 14°12'46 | 27°R25 | S 1 |
| S 2 | 6 49 31 | 12°18'32 | 20°42' | 15°12'44 | 29° 8' | 21°12'51 | 13°39' | 20°12'47 | 5° 6' | 22°12'45 | 21°12'28 | 24°12' 8 | 23°36' | 14°52' | 27°12'22 | S 2 |
| M 3 | 6 53 28 | 13°19'41 | 4°14' | 14°25' | 0°48' | 21°14'43 | 13°48' | 20°20'45 | 5° 8' | 22°22'44 | 21°22'28 | 24°22' 6 | 23°33' | 14°59' | 27°18' | M 3 |
| T 4 | 6 57 24 | 14°20'50 | 17°19' | 13° 3' | 0°59' | 21°16'33 | 13°58' | 20°22'43 | 5°10' | 22°24'43 | 21°24'28 | 24°24' 6 | 23°30' | 15° 6' | 27°14' | T 4 |
| W 5 | 7 1 21 | 15°21'59 | 0°11' | 11°43' | 1°53' | 21°18'23 | 14° 7' | 20°24'41 | 5°13' | 22°26'42 | 21°26'28 | 24°26' 6 | 23°27' | 15°13' | 27°11' | W 5 |
| T 6 | 7 5 17 | 16°23'08 | 12°25' | 10°26' | 2°46' | 21°20'11 | 14°16' | 20°26'39 | 5°15' | 22°28'40 | 21°28'28 | 24°28' 5 | 23°23' | 15°19' | 27° 7' | T 6 |
| F 7 | 7 9 14 | 17°24'18 | 24°36' | 9°14' | 3°39' | 20°22'59 | 14°25' | 20°28'38 | 5°18' | 22°30'39 | 21°30'28 | 24°30' 2 | 23°20' | 15°26' | 27° 4' | F 7 |
| S 8 | 7 13 10 | 18°25'28 | 6°13'38 | 8°10' | 4°32' | 20°24'46 | 14°34' | 20°30'36 | 5°21' | 22°32'38 | 21°32'28 | 24°32'56 | 23°17' | 15°33' | 27° 0' | S 8 |
| S 9 | 7 17 7 | 19°26'38 | 18°34' | 7°15' | 5°23' | 20°26'33 | 14°43' | 20°32'35 | 5°23' | 22°34'36 | 21°34'28 | 24°34'46 | 23°14' | 15°40' | 26°57' | S 9 |
| M10 | 7 21 4 | 20°27'47 | 0°12'36 | 6°29' | 6°14' | 20°28'18 | 14°51' | 20°34'34 | 5°26' | 22°36'35 | 21°36'28 | 24°36'44 | 23°11' | 15°46' | 26°53' | M10 |
| T 11 | 7 25 0 | 21°28'57 | 12°18' | 5°53' | 7° 4' | 20°30' 3 | 15° 0' | 20°36'33 | 5°29' | 22°38'34 | 21°38'28 | 24°38'40 | 23° 7' | 15°53' | 26°50' | T 11 |
| W12 | 7 28 57 | 22°30'06 | 24°10' | 5°27' | 7°53' | 19°47' | 15° 8' | 20°38'31 | 5°31' | 22°40'32 | 21°40'29 | 24°40'42 | 23° 4' | 16° 0' | 26°47' | W12 |
| T 13 | 7 32 53 | 23°31'15 | 6°11'4 | 5°11' | 8°41' | 19°30' | 15°16' | 20°40'31 | 5°34' | 22°42'31 | 21°42'29 | 24°42'49 | 23° 1' | 16° 6' | 26°43' | T 13 |
| F 14 | 7 36 50 | 24°32'24 | 18° 1' | 5°D 4 | 9°28' | 19°13' | 15°25' | 20°42'30 | 5°37' | 22°44'29 | 21°44'29 | 24°44'55 | 22°58' | 16°13' | 26°40' | F 14 |
| S 15 | 7 40 46 | 25°33'32 | 0°12' 2 | 5° 6' | 10°15' | 18°55' | 15°33' | 20°44'29 | 5°40' | 22°46'28 | 21°46'29 | 24°46'52 | 22°55' | 16°20' | 26°37' | S 15 |
| S 16 | 7 44 43 | 26°34'40 | 12°10' | 5°16' | 11° 0' | 18°36' | 15°41' | 20°46'28 | 5°42' | 22°48'26 | 21°48'30 | 24°48'15 | 22°52' | 16°27' | 26°34' | S 16 |
| M17 | 7 48 39 | 27°35'47 | 24°26' | 5°33' | 11°45' | 18°17' | 15°48' | 20°48'28 | 5°45' | 22°50'25 | 21°50'30 | 24°50'10 | 22°48' | 16°33' | 26°31' | M17 |
| T 18 | 7 52 36 | 28°36'53 | 6°15'56 | 5°57' | 12°28' | 17°57' | 15°56' | 20°50'28 | 5°48' | 22°52'24 | 21°52'30 | 24°52' 8 | 22°45' | 16°40' | 26°28' | T 18 |
| W19 | 7 56 33 | 29°37'58 | 19°41' | 6°28' | 13°10' | 17°37' | 16° 3' | 20°52'27 | 5°51' | 22°54'22 | 21°54'30 | 24°54' 7 | 22°42' | 16°47' | 26°25' | W19 |
| T 20 | 8 0 29 | 0°39'03 | 2°12'47 | 7° 4' | 13°51' | 17°16' | 16°11' | 20°54'27 | 5°54' | 22°56'20 | 21°56'31 | 24°56' 7 | 22°39' | 16°53' | 26°22' | T 20 |
| F 21 | 8 4 26 | 1°40'06 | 16°18' | 7°45' | 14°31' | 16°54' | 16°18' | 20°56'27 | 5°57' | 22°58'19 | 21°58'31 | 24°58' 6 | 22°36' | 17° 0' | 26°19' | F 21 |
| S 22 | 8 8 22 | 2°41'09 | 0°12'15 | 8°30' | 15° 9' | 16°32' | 16°25' | 20°58'27 | 6° 0' | 22°60'17 | 21°60'32 | 24°60' 4 | 22°33' | 17° 7' | 26°16' | S 22 |
| S 23 | 8 12 19 | 3°42'11 | 14°40' | 9°20' | 15°47' | 16°10' | 16°32' | 20°60'27 | 6° 3' | 22°62'16 | 21°62'32 | 24°62'59 | 22°29' | 17°14' | 26°13' | S 23 |
| M24 | 8 16 15 | 4°43'12 | 29°30' | 10°14' | 16°22' | 15°47' | 16°39' | 20°62'28 | 6° 6' | 22°64'14 | 21°64'32 | 24°64'51 | 22°26' | 17°20' | 26°11' | M24 |
| T 25 | 8 20 12 | 5°44'12 | 14°26'39 | 11°11' | 16°57' | 15°24' | 16°45' | 20°64'28 | 6° 9' | 22°66'13 | 21°66'33 | 24°66'41 | 22°23' | 17°27' | 26° 8' | T 25 |
| W26 | 8 24 8 | 6°45'11 | 29°57' | 12°11' | 17°30' | 15° 1' | 16°52' | 20°66'29 | 6°12' | 22°68'11 | 21°68'33 | 24°68'30 | 22°20' | 17°34' | 26° 5' | W26 |
| T 27 | 8 28 5 | 7°46'09 | 15°12'13 | 13°14' | 18° 1' | 14°38' | 16°58' | 20°68'29 | 6°15' | 22°70' 9 | 21°70'34 | 24°70'19 | 22°17' | 17°41' | 26° 3' | T 27 |
| F 28 | 8 32 2 | 8°47'06 | 0°12'16 | 14°19' | 18°31' | 14°14' | 17° 4' | 20°70'30 | 6°19' | 22°72' 8 | 21°72'34 | 24°72'10 | 22°13' | 17°47' | 26° 0' | F 28 |
| S 29 | 8 35 58 | 9°48'03 | 14°56' | 15°26' | 18°59' | 13°50' | 17°10' | 20°72'31 | 6°22' | 22°74' 6 | 21°74'35 | 24°74' 3 | 22°10' | 17°54' | 25°58' | S 29 |
| S 30 | 8 39 55 | 10°48'58 | 29° 9' | 16°36' | 19°26' | 13°26' | 17°16' | 20°74'32 | 6°25' | 22°76' 5 | 21°76'35 | 24°76'58 | 22° 7' | 18° 1' | 25°56' | S 30 |
| M31 | 8 43 51 | 11°49'53 | 12°12'51 | 17°12'48 | 19°12'50 | 13°12' 2 | 17°12'22 | 20°76'33 | 6°28' | 22°78' 3 | 21°78'36 | 24°78'56 | 22° 4' | 18° 7' | 25°53' | M31 |

Delta T = 88.33 sec

FEBRUARY 2089

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|----------|----------|----------|----------|----------|----------|----------|-------|--------|--------|--------|----------|----------|----------|------|
| T 1 | 8 47 48 | 12°50'48 | 26°12' 4 | 19°12' 3 | 20°12'13 | 12°R38 | 17°12'28 | 20°12'34 | 6°31' | 22°R 1 | 21°R37 | 20°D56 | 22°12' 1 | 18°12'14 | 25°R51 | T 1 |
| W 2 | 8 51 44 | 13°51'41 | 8°12'58 | 20°16' | 20°34' | 12°12'14 | 17°33' | 20°35' | 6°35' | 22°R 0 | 21°R37 | 20°R57 | 21°58' | 18°21' | 25°12'49 | W 2 |
| T 3 | 8 55 41 | 14°52'34 | 21°18' | 21°33' | 20°53' | 11°50' | 17°38' | 20°37' | 6°38' | 21°58' | 21°38' | 20°D57 | 21°58' | 18°28' | 25°14'7 | T 3 |
| F 4 | 8 59 37 | 15°53'26 | 3°12'29 | 22°51' | 21°10' | 11°26' | 17°43' | 20°38' | 6°41' | 21°56' | 21°39' | 20°55' | 21°51' | 18°34' | 25°14'5 | F 4 |
| S 5 | 9 3 34 | 16°54'17 | 15°29' | 24°10' | 21°25' | 11° 3' | 17°48' | 20°40' | 6°44' | 21°55' | 21°39' | 20°51' | 21°48' | 18°41' | 25°14'3 | S 5 |
| S 6 | 9 7 31 | 17°55'08 | 27°22' | 25°31' | 21°38' | 10°39' | 17°53' | 20°42' | 6°48' | 21°53' | 21°40' | 20°44' | 21°45' | 18°48' | 25°14'1 | S 6 |
| M 7 | 9 11 27 | 18°55'57 | 9°12'12 | 26°53' | 21°49' | 10°16' | 17°58' | 20°44' | 6°51' | 21°51' | 21°41' | 20°35' | 21°42' | 18°54' | 25°13'9 | M 7 |
| T 8 | 9 15 24 | 19°56'45 | 21° 3' | 28°16' | 21°57' | 9°53' | 18° 2' | 20°46' | 6°54' | 21°49' | 21°41' | 20°24' | 21°38' | 19° 1' | 25°13'8 | T 8 |
| W 9 | 9 19 20 | 20°57'33 | 2°12'57 | 29°40' | 22° 3' | 9°31' | 18° 6' | 20°48' | 6°58' | 21°48' | 21°42' | 20°12' | 21°35' | 19° 8' | 25°13'6 | W 9 |
| T 10 | 9 23 17 | 21°58'19 | 14°56' | 1°12'5 | 22° 7' | 9° 9' | 18°11' | 20°50' | 7° 1' | 21°46' | 21°43' | 20° 0' | 21°32' | 19°15' | 25°13'4 | T 10 |
| F 11 | 9 27 13 | 22°59'03 | 27° 1' | 2°31' | 22°R 8 | 8°47' | 18°14' | 20°52' | 7° 4' | 21°44' | 21°44' | 19°49' | 21°29' | 19°21' | 25°13'3 | F 11 |
| S 12 | 9 31 10 | 23°59'47 | 9°12'13 | 3°58' | 22° 7' | 8°26' | 18°18' | 20°55' | 7° 8' | 21°43' | 21°45' | 19°40' | 21°26' | 19°28' | 25°13'2 | S 12 |
| S 13 | 9 35 6 | 25° 0'29 | 21°32' | 5°26' | 22° 3' | 8° 5' | 18°22' | 20°57' | 7°11' | 21°41' | 21°45' | 19°34' | 21°23' | 19°35' | 25°13'0 | S 13 |
| M14 | 9 39 3 | 26° 1'09 | 4°12' 2 | 6°55' | 21°57' | 7°45' | 18°25' | 21° 0' | 7°15' | 21°39' | 21°46' | 19°30' | 21°19' | 19°42' | 25°12'9 | M14 |
| T 15 | 9 43 0 | 27° 1'48 | 16°42' | 8°25' | 21°48' | 7°25' | 18°28' | 21° 3' | 7°18' | 21°38' | 21°47' | 19°D29 | 21°16' | 19°48' | 25°12'8 | T 15 |
| W16 | 9 46 56 | 28° 2'25 | 29°35' | 9°56' | 21°37' | 7° 6' | 18°31' | 21° 5' | 7°21' | 21°36' | 21°48' | 19°29' | 21°13' | 19°55' | 25°12'7 | W16 |
| T 17 | 9 50 53 | 29° 3'01 | 12°12'45 | 11°28' | 21°23' | 6°48' | 18°34' | 21° 8' | 7°25' | 21°34' | 21°49' | 19°30' | 21°10' | 20° 2' | 25°12'6 | T 17 |
| F 18 | 9 54 49 | 0°12'34 | 0°12'34 | 13° 1' | 21° 7' | 6°30' | 18°37' | 21°11' | 7°28' | 21°33' | 21°50' | 19°R31 | 21° 7' | 20° 8' | 25°12'5 | F 18 |
| S 19 | 9 58 46 | 1° 4'06 | 10°12' 2 | 14°34' | 20°48' | 6°13' | 18°39' | 21°14' | 7°32' | 21°31' | 21°51' | 19°31' | 21° 4' | 20°15' | 25°12'4 | S 19 |
| S 20 | 10 2 42 | 2° 4'37 | 24°12' | 16° 9' | 20°27' | 5°57' | 18°42' | 21°18' | 7°35' | 21°29' | 21°52' | 19°28' | 21° 0' | 20°22' | 25°12'3 | S 20 |
| M21 | 10 6 39 | 3° 5'05 | 8°12'41 | 17°44' | 20° 4' | 5°41' | 18°44' | 21°21' | 7°39' | 21°28' | 21°53' | 19°24' | 20°57' | 20°29' | 25°12'2 | M21 |
| T 22 | 10 10 35 | 4° 5'31 | 23°28' | 19°21' | 19°38' | 5°26' | 18°46' | 21°24' | 7°42' | 21°26' | 21°54' | 19°18' | 20°54' | 20°35' | 25°12'1 | T 22 |
| W23 | 10 14 32 | 5° 5'56 | 8°12'24 | 20°58' | 19°10' | 5°12' | 18°48' | 21°28' | 7°45' | 21°24' | 21°55' | 19°12' | 20°51' | 20°42' | 25°12'0 | W23 |
| T 24 | 10 18 29 | 6° 6'19 | 23°22' | 22°36' | 18°41' | 4°59' | 18°49' | 21°32' | 7°49' | 21°23' | 21°56' | 19° 5' | 20°48' | 20°49' | 25°11'9 | T 24 |
| F 25 | 10 22 25 | 7° 6'40 | 8°12'12 | 24°16' | 18° 9' | 4°46' | 18°51' | 21°35' | 7°52' | 21°21' | 21°57' | 18°59' | 20°44' | 20°56' | 25°11'8 | F 25 |
| S 26 | 10 26 22 | 8° 6'59 | 22°46' | 25°56' | 17°36' | 4°34' | 18°52' | 21°39' | 7°56' | 21°20' | 21°58' | 18°54' | 20°41' | 21° 2' | 25°11'7 | S 26 |
| S 27 | 10 30 18 | 9° 7'17 | 6°12'58 | 27°37' | 17° 2' | 4°23' | 18°53' | 21°43' | 7°59' | 21°18' | 21°59' | 18°52' | 20°38' | 21° 9' | 25°11'6 | S 27 |
| M28 | 10 34 15 | 10° 7'33 | 20°12'44 | 29°12'19 | 16°12'27 | 4°12'13 | 18°54' | 21°47' | 8° 3' | 21°16' | 22° 0' | 18°D51 | 20°35' | 21°12'16 | 25°11'5 | M28 |

Delta T = 88.37 sec

ASTRODIENST EPHEMERIS for the year 2089

geocentric

MARCH 2089

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|----------|--------|--------|---------|--------|---------|----------|-------|---------|--------|---------|--------|--------|---------|------|
| T 1 | 10 38 11 | 11° 7'48 | 4° 4' | 1° 2' | 15° R50 | 4° R 3 | 18° M54 | 21° 8'51 | 8° 6' | 21° R15 | 22° 1' | 18° 52 | 20° 32 | 21° 22 | 25° D20 | T 1 |
| W 2 | 10 42 8 | 12° 8'01 | 16° 59 | 2° 47 | 15° 13 | 3° 54 | 18° 55 | 21° 55 | 8° 10 | 21° 13 | 22° 2 | 18° 54 | 20° 29 | 21° 29 | 25° I20 | W 2 |
| T 3 | 10 46 4 | 13° 8'13 | 29° 31 | 4° 32 | 14° 36 | 3° 46 | 18° 55 | 22° 0 | 8° 13 | 21° 12 | 22° 4 | 18° 55 | 20° 25 | 21° 36 | 25° 20 | T 3 |
| F 4 | 10 50 1 | 14° 8'23 | 11° 47 | 6° 18 | 13° 58 | 3° 39 | 18° R55 | 22° 4 | 8° 16 | 21° 10 | 22° 5 | 18° R56 | 20° 22 | 21° 43 | 25° 20 | F 4 |
| S 5 | 10 53 58 | 15° 8'32 | 23° 49 | 8° 6 | 13° 20 | 3° 33 | 18° 55 | 22° 8 | 8° 20 | 21° 9 | 22° 6 | 18° 56 | 20° 19 | 21° 49 | 25° 21 | S 5 |
| S 6 | 10 57 54 | 16° 8'39 | 5° 44 | 9° 54 | 12° 43 | 3° 27 | 18° 55 | 22° 13 | 8° 23 | 21° 7 | 22° 7 | 18° 54 | 20° 16 | 21° 56 | 25° 21 | S 6 |
| M 7 | 11 1 51 | 17° 8'44 | 17° 35 | 11° 44 | 12° 7 | 3° 22 | 18° 54 | 22° 17 | 8° 27 | 21° 6 | 22° 8 | 18° 50 | 20° 13 | 22° 3 | 25° 21 | M 7 |
| T 8 | 11 5 47 | 18° 8'48 | 29° 27 | 13° 34 | 11° 31 | 3° 18 | 18° 54 | 22° 22 | 8° 30 | 21° 4 | 22° 9 | 18° 46 | 20° 10 | 22° 9 | 25° 22 | T 8 |
| W 9 | 11 9 44 | 19° 8'50 | 11° 24 | 15° 26 | 10° 56 | 3° 15 | 18° 53 | 22° 27 | 8° 34 | 21° 3 | 22° 11 | 18° 41 | 20° 6 | 22° 16 | 25° 23 | W 9 |
| T 10 | 11 13 40 | 20° 8'51 | 23° 28 | 17° 19 | 10° 23 | 3° 12 | 18° 52 | 22° 32 | 8° 37 | 21° 1 | 22° 12 | 18° 35 | 20° 3 | 22° 23 | 25° 23 | T 10 |
| F 11 | 11 17 37 | 21° 8'50 | 5° 42 | 19° 13 | 9° 51 | 3° 11 | 18° 50 | 22° 37 | 8° 40 | 21° 0 | 22° 13 | 18° 30 | 20° 0 | 22° 30 | 25° 24 | F 11 |
| S 12 | 11 21 33 | 22° 8'46 | 18° 6 | 21° 8 | 9° 21 | 3° 10 | 18° 49 | 22° 42 | 8° 44 | 20° 59 | 22° 14 | 18° 27 | 19° 57 | 22° 36 | 25° 25 | S 12 |
| S 13 | 11 25 30 | 23° 8'41 | 0° 42 | 23° 3 | 8° 52 | 3° D10 | 18° 47 | 22° 47 | 8° 47 | 20° 57 | 22° 16 | 18° 24 | 19° 54 | 22° 43 | 25° 26 | S 13 |
| M14 | 11 29 26 | 24° 8'34 | 13° 30 | 25° 0 | 8° 26 | 3° 10 | 18° 46 | 22° 52 | 8° 50 | 20° 56 | 22° 17 | 18° D23 | 19° 50 | 22° 50 | 25° 27 | M14 |
| T 15 | 11 33 23 | 25° 8'25 | 26° 31 | 26° 58 | 8° 2 | 3° 11 | 18° 44 | 22° 57 | 8° 54 | 20° 54 | 22° 18 | 18° 23 | 19° 47 | 22° 57 | 25° 28 | T 15 |
| W16 | 11 37 20 | 26° 8'14 | 9° 44 | 28° 56 | 7° 39 | 3° 13 | 18° 41 | 23° 3 | 8° 57 | 20° 53 | 22° 19 | 18° 24 | 19° 44 | 23° 3 | 25° 29 | W16 |
| T 17 | 11 41 16 | 27° 8'01 | 23° 10 | 0° 55 | 7° 20 | 3° 16 | 18° 39 | 23° 8 | 9° 0 | 20° 52 | 22° 21 | 18° 26 | 19° 41 | 23° 10 | 25° 31 | T 17 |
| F 18 | 11 45 13 | 28° 7'45 | 6° 49 | 2° 54 | 7° 2 | 3° 19 | 18° 37 | 23° 13 | 9° 4 | 20° 51 | 22° 22 | 18° 27 | 19° 38 | 23° 17 | 25° 32 | F 18 |
| S 19 | 11 49 9 | 29° 7'28 | 20° 41 | 4° 54 | 6° 47 | 3° 23 | 18° 34 | 23° 19 | 9° 7 | 20° 49 | 22° 23 | 18° 28 | 19° 35 | 23° 23 | 25° 33 | S 19 |
| S 20 | 11 53 6 | 0° 7'08 | 4° 46 | 6° 54 | 6° 34 | 3° 28 | 18° 31 | 23° 25 | 9° 10 | 20° 48 | 22° 25 | 18° R28 | 19° 31 | 23° 30 | 25° 35 | S 20 |
| M21 | 11 57 2 | 1° 6'46 | 19° 1 | 8° 54 | 6° 24 | 3° 34 | 18° 28 | 23° 30 | 9° 14 | 20° 47 | 22° 26 | 18° 27 | 19° 28 | 23° 37 | 25° 36 | M21 |
| T 22 | 12 0 59 | 2° 6'21 | 3° 26 | 10° 53 | 6° 16 | 3° 40 | 18° 25 | 23° 36 | 9° 17 | 20° 46 | 22° 27 | 18° 26 | 19° 25 | 23° 44 | 25° 38 | T 22 |
| W23 | 12 4 55 | 3° 5'54 | 17° 55 | 12° 52 | 6° 11 | 3° 46 | 18° 21 | 23° 42 | 9° 20 | 20° 45 | 22° 29 | 18° 24 | 19° 22 | 23° 50 | 25° 40 | W23 |
| T 24 | 12 8 52 | 4° 5'25 | 2° 47 | 14° 50 | 6° 8 | 3° 54 | 18° 18 | 23° 48 | 9° 23 | 20° 43 | 22° 30 | 18° 22 | 19° 19 | 23° 57 | 25° 42 | T 24 |
| F 25 | 12 12 49 | 5° 4'54 | 16° 46 | 6° D 7 | 4° 2 | 4° 2 | 18° 14 | 23° 54 | 9° 27 | 20° 42 | 22° 31 | 18° 20 | 19° 15 | 24° 4 | 25° 44 | F 25 |
| S 26 | 12 16 45 | 6° 4'20 | 0° 59 | 18° 41 | 6° 9 | 4° 10 | 18° 10 | 24° 0 | 9° 30 | 20° 41 | 22° 33 | 18° 19 | 19° 12 | 24° 10 | 25° 45 | S 26 |
| S 27 | 12 20 42 | 7° 3'44 | 14° 56 | 20° 34 | 6° 14 | 4° 19 | 18° 6 | 24° 6 | 9° 33 | 20° 40 | 22° 34 | 18° D19 | 19° 9 | 24° 17 | 25° 48 | S 27 |
| M28 | 12 24 38 | 8° 3'07 | 28° 33 | 22° 24 | 6° 20 | 4° 29 | 18° 2 | 24° 12 | 9° 36 | 20° 39 | 22° 35 | 18° 19 | 19° 6 | 24° 24 | 25° 50 | M28 |
| T 29 | 12 28 35 | 9° 2'27 | 11° 49 | 24° 11 | 6° 29 | 4° 39 | 17° 57 | 24° 18 | 9° 39 | 20° 38 | 22° 37 | 18° 20 | 19° 3 | 24° 31 | 25° 52 | T 29 |
| W30 | 12 32 31 | 10° 1'46 | 24° 44 | 25° 55 | 6° 40 | 4° 50 | 17° 53 | 24° 24 | 9° 42 | 20° 37 | 22° 38 | 18° 20 | 19° 0 | 24° 37 | 25° 54 | W30 |
| T 31 | 12 36 28 | 11° 1'03 | 7° 20 | 27° 35 | 6° 53 | 5° 1 | 17° M48 | 24° 31 | 9° 45 | 20° 36 | 22° 40 | 18° 21 | 18° 56 | 24° 44 | 25° 56 | T 31 |

Delta T = 88.40 sec

APRIL 2089

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|-----------|--------|---------|--------|--------|---------|--------|--------|---------|--------|---------|--------|--------|--------|------|
| F 1 | 12 40 24 | 12° 0'18 | 19° 39 | 29° 10 | 7° 8 | 5° 13 | 17° R43 | 24° 37 | 9° 48 | 20° R35 | 22° 41 | 18° 22 | 18° 53 | 24° 51 | 25° 59 | F 1 |
| S 2 | 12 44 21 | 12° 59'31 | 1° 45 | 0° 42 | 7° 26 | 5° 26 | 17° M38 | 24° 44 | 9° 51 | 20° 34 | 22° 42 | 18° 22 | 18° 50 | 24° 58 | 26° 1 | S 2 |
| S 3 | 12 48 18 | 13° 58'43 | 13° 42 | 2° 8 | 7° 45 | 5° 39 | 17° 33 | 24° 50 | 9° 54 | 20° 33 | 22° 44 | 18° R22 | 18° 47 | 25° 4 | 26° 4 | S 3 |
| M 4 | 12 52 14 | 14° 57'53 | 25° 35 | 3° 29 | 8° 6 | 5° 52 | 17° 28 | 24° 57 | 9° 57 | 20° 33 | 22° 45 | 18° 22 | 18° 44 | 25° 11 | 26° 7 | M 4 |
| T 5 | 12 56 11 | 15° 57'01 | 7° 29 | 4° 45 | 8° 29 | 6° 6 | 17° 22 | 25° 3 | 10° 0 | 20° 32 | 22° 47 | 18° 22 | 18° 41 | 25° 18 | 26° 9 | T 5 |
| W 6 | 13 0 7 | 16° 56'07 | 19° 27 | 5° 55 | 8° 53 | 6° 20 | 17° 17 | 25° 10 | 10° 3 | 20° 31 | 22° 48 | 18° 22 | 18° 37 | 25° 24 | 26° 12 | W 6 |
| T 7 | 13 4 4 | 17° 55'11 | 1° 35 | 6° 59 | 9° 20 | 6° 35 | 17° 11 | 25° 17 | 10° 6 | 20° 30 | 22° 49 | 18° D22 | 18° 34 | 25° 31 | 26° 15 | T 7 |
| F 8 | 13 8 0 | 18° 54'14 | 13° 54 | 7° 57 | 9° 47 | 6° 51 | 17° 5 | 25° 23 | 10° 9 | 20° 29 | 22° 51 | 18° 22 | 18° 31 | 25° 38 | 26° 18 | F 8 |
| S 9 | 13 11 57 | 19° 53'14 | 26° 29 | 8° 49 | 10° 17 | 7° 6 | 16° 59 | 25° 30 | 10° 12 | 20° 29 | 22° 52 | 18° 22 | 18° 28 | 25° 45 | 26° 21 | S 9 |
| S 10 | 13 15 53 | 20° 52'13 | 9° 20 | 9° 35 | 10° 48 | 7° 23 | 16° 53 | 25° 37 | 10° 15 | 20° 28 | 22° 54 | 18° 22 | 18° 25 | 25° 51 | 26° 24 | S 10 |
| M11 | 13 19 50 | 21° 51'10 | 22° 29 | 10° 14 | 11° 20 | 7° 39 | 16° 47 | 25° 44 | 10° 18 | 20° 27 | 22° 55 | 18° R22 | 18° 21 | 25° 58 | 26° 27 | M11 |
| T 12 | 13 23 46 | 22° 50'05 | 5° 53 | 10° 46 | 11° 54 | 7° 56 | 16° 40 | 25° 51 | 10° 20 | 20° 27 | 22° 56 | 18° 22 | 18° 18 | 26° 5 | 26° 30 | T 12 |
| W13 | 13 27 43 | 23° 48'58 | 9° 53 | 11° 12 | 12° 29 | 8° 14 | 16° 34 | 25° 58 | 10° 23 | 20° 26 | 22° 58 | 18° 21 | 18° 15 | 26° 11 | 26° 33 | W13 |
| T 14 | 13 31 40 | 24° 47'48 | 3° 25 | 11° 31 | 13° 5 | 8° 32 | 16° 27 | 26° 5 | 10° 26 | 20° 26 | 22° 59 | 18° 21 | 18° 12 | 26° 18 | 26° 37 | T 14 |
| F 15 | 13 35 36 | 25° 46'37 | 17° 26 | 11° 44 | 13° 43 | 8° 50 | 16° 21 | 26° 12 | 10° 28 | 20° 25 | 23° 1 | 18° 20 | 18° 9 | 26° 25 | 26° 40 | F 15 |
| S 16 | 13 39 33 | 26° 45'23 | 1° 35 | 11° 50 | 14° 21 | 9° 9 | 16° 14 | 26° 19 | 10° 31 | 20° 25 | 23° 2 | 18° 19 | 18° 6 | 26° 32 | 26° 43 | S 16 |
| S 17 | 13 43 29 | 27° 44'08 | 15° 47 | 11° R50 | 15° 1 | 9° 28 | 16° 7 | 26° 26 | 10° 34 | 20° 24 | 23° 4 | 18° 19 | 18° 2 | 26° 38 | 26° 47 | S 17 |
| M18 | 13 47 26 | 28° 42'49 | 0° 1 | 11° 45 | 15° 42 | 9° 48 | 16° 0 | 26° 33 | 10° 36 | 20° 24 | 23° 5 | 18° D18 | 17° 59 | 26° 45 | 26° 50 | M18 |
| T 19 | 13 51 22 | 29° 41'29 | 14° 13 | 11° 33 | 16° 24 | 10° 7 | 15° 53 | 26° 40 | 10° 39 | 20° 23 | 23° 6 | 18° 19 | 17° 56 | 26° 52 | 26° 54 | T 19 |
| W20 | 13 55 19 | 0° 40'06 | 28° 21 | 11° 16 | 17° 7 | 10° 28 | 15° 46 | 26° 48 | 10° 41 | 20° 23 | 23° 8 | 18° 19 | 17° 53 | 26° 59 | 26° 58 | W20 |
| T 21 | 13 59 15 | 1° 38'41 | 12° 24 | 10° 54 | 17° 51 | 10° 48 | 15° 39 | 26° 55 | 10° 44 | 20° 23 | 23° 9 | 18° 20 | 17° 50 | 27° 5 | 27° 1 | T 21 |
| F 22 | 14 3 12 | 2° 37'14 | 26° 18 | 10° 27 | 18° 35 | 11° 9 | 15° 32 | 27° 2 | 10° 46 | 20° 23 | 23° 11 | 18° 21 | 17° 46 | 27° 12 | 27° 5 | F 22 |
| S 23 | 14 7 9 | 3° 35'45 | 10° 3 | 9° 57 | 19° 21 | 11° 30 | 15° 24 | 27° 10 | 10° 49 | 20° 22 | 23° 12 | 18° 22 | 17° 43 | 27° 19 | 27° 9 | S 23 |
| S 24 | 14 11 5 | 4° 34'14 | 23° 34 | 9° 23 | 20° 8 | 11° 52 | 15° 17 | 27° 17 | 10° 51 | 20° 22 | 23° 13 | 18° R22 | 17° 40 | 27° 25 | 27° 13 | S 24 |
| M25 | 14 15 2 | 5° 32'41 | 6° 52 | 8° 46 | 20° 55 | 12° 14 | 15° 9 | 27° 24 | 10° 53 | 20° 22 | 23° 15 | 18° 22 | 17° 37 | 27° 32 | 27° 17 | M25 |
| T 26 | 14 18 58 | 6° 31'06 | 19° 55 | 8° 7 | 21° 43 | 12° 36 | 15° 2 | 27° 32 | 10° 56 | 20° 22 | 23° 16 | 18° 20 | 17° 34 | 27° 39 | 27° 21 | T 26 |
| W27 | 14 22 55 | 7° 29'29 | 2° 41 | 7° 28 | 22° 32 | 12° 58 | 14° 54 | 27° 39 | 10° 58 | 20° 22 | 23° 18 | 18° 17 | 17° 31 | 27° 46 | 27° 25 | W27 |
| T 28 | 14 26 51 | 8° 27'51 | 15° 13 | 6° 47 | 23° 22 | 13° 21 | 14° 47 | 27° 47 | 11° 0 | 20° 21 | 23° 19 | 18° 14 | 17° 27 | 27° 52 | 27° 29 | T 28 |
| F 29 | 14 30 48 | 9° 26'11 | 27° 30 | 6° 7 | 24° 12 | 13° 44 | 14° 39 | 27° 54 | 11° 2 | 20° 21 | 23° 20 | 18° 11 | 17° 24 | 27° 59 | 27° 33 | F 29 |
| S 30 | 14 34 44 | 10° 24'29 | 9° 36 | 5° 28 | 25° 3 | 14° 1 | 14° M32 | 28° 2 | 11° 4 | 20° D21 | 23° 22 | 18° 8 | 17° 21 | 28° 6 | 27° 37 | S 30 |

Delta T = 88.44 sec

ASTRODIENST EPHEMERIS for the year 2089

geocentric

MAY 2089

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|------------|---------|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|--------|--------|------|
| S 1 | 14 38 41 | 11°22'46 | 21°34 | 4°R51 | 25°55 | 14°31 | 14°R24 | 28°8 9 | 11°7 7 | 20°21 | 23°23 | 18°R 6 | 17°18 | 28°12 | 27°42 | S 1 |
| M 2 | 14 42 38 | 12°21'01 | 3°28 | 4°15 | 26°47 | 14°55 | 14°M17 | 28°17 | 11°9 9 | 20°21 | 23°24 | 18°4 4 | 17°15 | 28°19 | 27°46 | M 2 |
| T 3 | 14 46 34 | 13°19'15 | 15°21 | 3°43 | 27°40 | 15°19 | 14°9 9 | 28°24 | 11°11 | 20°21 | 23°26 | 18°D 4 | 17°12 | 28°26 | 27°50 | T 3 |
| W 4 | 14 50 31 | 14°17'27 | 27°19 | 3°13 | 28°34 | 15°43 | 14°1 1 | 28°32 | 11°13 | 20°22 | 23°27 | 18°5 5 | 17°8 8 | 28°33 | 27°55 | W 4 |
| T 5 | 14 54 27 | 15°15'38 | 9°27 | 2°48 | 29°28 | 16°8 8 | 13°54 | 28°40 | 11°15 | 20°22 | 23°28 | 18°6 6 | 17°5 5 | 28°39 | 27°59 | T 5 |
| F 6 | 14 58 24 | 16°13'47 | 21°49 | 2°26 | 0°Y23 | 16°33 | 13°46 | 28°47 | 11°16 | 20°22 | 23°30 | 18°8 8 | 17°2 2 | 28°46 | 28°4 4 | F 6 |
| S 7 | 15 2 20 | 17°11'55 | 4°Y29 | 2°9 9 | 1°18 | 16°58 | 13°38 | 28°55 | 11°18 | 20°22 | 23°31 | 18°9 9 | 16°59 | 28°53 | 28°8 8 | S 7 |
| S 8 | 15 6 17 | 18°10'01 | 17°30 | 1°56 | 2°13 | 17°24 | 13°31 | 29°3 3 | 11°20 | 20°22 | 23°32 | 18°R10 | 16°56 | 28°59 | 28°13 | S 8 |
| M 9 | 15 10 13 | 19°8'06 | 0°53 | 1°48 | 3°9 9 | 17°49 | 13°23 | 29°10 | 11°22 | 20°23 | 23°34 | 18°9 9 | 16°52 | 29°6 6 | 28°17 | M 9 |
| T 10 | 15 14 10 | 20°6'10 | 14°38 | 1°D44 | 4°6 6 | 18°15 | 13°15 | 29°18 | 11°24 | 20°23 | 23°35 | 18°7 7 | 16°49 | 29°13 | 28°22 | T 10 |
| W11 | 15 18 7 | 21°4'12 | 28°43 | 1°45 | 5°3 3 | 18°41 | 13°8 8 | 29°26 | 11°25 | 20°23 | 23°36 | 18°4 4 | 16°46 | 29°20 | 28°27 | W11 |
| T 12 | 15 22 3 | 22°2'12 | 13°II 3 | 1°51 | 6°1 1 | 19°8 8 | 13°0 0 | 29°33 | 11°27 | 20°24 | 23°37 | 17°59 | 16°43 | 29°26 | 28°32 | T 12 |
| F 13 | 15 26 0 | 23°0'11 | 27°33 | 2°1 1 | 6°58 | 19°34 | 12°53 | 29°41 | 11°29 | 20°24 | 23°39 | 17°54 | 16°40 | 29°33 | 28°36 | F 13 |
| S 14 | 15 29 56 | 23°58'08 | 12°52 6 | 2°16 | 7°57 | 20°1 1 | 12°45 | 29°49 | 11°30 | 20°24 | 23°40 | 17°49 | 16°37 | 29°40 | 28°41 | S 14 |
| S 15 | 15 33 53 | 24°56'03 | 26°37 | 2°36 | 8°55 | 20°28 | 12°38 | 29°57 | 11°32 | 20°25 | 23°41 | 17°45 | 16°33 | 29°47 | 28°46 | S 15 |
| M16 | 15 37 49 | 25°53'56 | 11°0 0 | 2°59 | 9°54 | 20°55 | 12°31 | 0°II 4 | 11°33 | 20°25 | 23°43 | 17°42 | 16°30 | 29°53 | 28°51 | M16 |
| T 17 | 15 41 46 | 26°51'48 | 25°12 | 3°27 | 10°54 | 21°23 | 12°24 | 0°12 | 11°35 | 20°26 | 23°44 | 17°D41 | 16°27 | 29°59 | 28°56 | T 17 |
| W18 | 15 45 42 | 27°49'37 | 9°II 1 | 4°0 0 | 11°53 | 21°50 | 12°16 | 0°20 | 11°36 | 20°26 | 23°45 | 17°42 | 16°24 | 0°7 7 | 29°1 1 | W18 |
| T 19 | 15 49 39 | 28°47'25 | 22°57 | 4°36 | 12°53 | 22°18 | 12°9 9 | 0°28 | 11°37 | 20°27 | 23°46 | 17°43 | 16°21 | 0°13 | 29°6 6 | T 19 |
| F 20 | 15 53 36 | 29°45'11 | 6°29 | 5°16 | 13°54 | 22°46 | 12°2 2 | 0°35 | 11°39 | 20°28 | 23°47 | 17°44 | 16°18 | 0°20 | 29°11 | F 20 |
| S 21 | 15 57 32 | 0°II42'56 | 19°49 | 5°59 | 14°54 | 23°14 | 11°55 | 0°43 | 11°40 | 20°28 | 23°49 | 17°R45 | 16°14 | 0°27 | 29°16 | S 21 |
| S 22 | 16 1 29 | 1°40'39 | 2°M56 | 6°47 | 15°55 | 23°42 | 11°48 | 0°51 | 11°41 | 20°29 | 23°50 | 17°44 | 16°11 | 0°34 | 29°21 | S 22 |
| M23 | 16 5 25 | 2°38'21 | 15°52 | 7°38 | 16°57 | 24°11 | 11°42 | 0°59 | 11°42 | 20°30 | 23°51 | 17°40 | 16°8 8 | 0°40 | 29°26 | M23 |
| T 24 | 16 9 22 | 3°36'01 | 28°36 | 8°32 | 17°58 | 24°40 | 11°35 | 1°7 7 | 11°43 | 20°31 | 23°52 | 17°35 | 16°5 5 | 0°47 | 29°31 | T 24 |
| W25 | 16 13 18 | 4°33'40 | 11°8 8 | 9°29 | 19°0 0 | 25°9 9 | 11°28 | 1°14 | 11°44 | 20°31 | 23°53 | 17°28 | 16°2 2 | 0°54 | 29°37 | W25 |
| T 26 | 16 17 15 | 5°31'18 | 23°30 | 10°30 | 20°2 2 | 25°38 | 11°22 | 1°22 | 11°45 | 20°32 | 23°54 | 17°20 | 15°58 | 1°0 0 | 29°42 | T 26 |
| F 27 | 16 21 11 | 6°28'55 | 5°341 | 11°34 | 21°5 5 | 26°7 7 | 11°16 | 1°30 | 11°46 | 20°33 | 23°55 | 17°11 | 15°55 | 1°7 7 | 29°47 | F 27 |
| S 28 | 16 25 8 | 7°26'31 | 17°44 | 12°41 | 22°7 7 | 26°36 | 11°9 9 | 1°38 | 11°47 | 20°34 | 23°56 | 17°2 2 | 15°52 | 1°14 | 29°52 | S 28 |
| S 29 | 16 29 5 | 8°24'05 | 29°40 | 13°51 | 23°10 | 27°6 6 | 11°3 3 | 1°45 | 11°48 | 20°35 | 23°57 | 16°55 | 15°49 | 1°21 | 29°58 | S 29 |
| M30 | 16 33 1 | 9°21'39 | 11°32 | 15°4 4 | 24°13 | 27°35 | 10°57 | 1°53 | 11°49 | 20°36 | 23°59 | 16°49 | 15°46 | 1°27 | 0°3 3 | M30 |
| T 31 | 16 36 58 | 10°II19'12 | 23°24 | 16°819 | 25°Y17 | 28°0 5 | 10°M51 | 2°II 1 | 11°50 | 20°37 | 24°Y 0 | 16°45 | 15°43 | 1°34 | 0°8 8 | T 31 |

Delta T = 88.47 sec

JUNE 2089

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| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|------------|--------|--------|--------|---------|--------|--------|--------|--------|--------|--------|--------|-------|-------|------|
| W 1 | 16 40 54 | 11°II16'43 | 5°X21 | 17°838 | 26°Y20 | 28°035 | 10°R45 | 2°II 9 | 11°X51 | 20°038 | 24°Y 1 | 16°R43 | 15°39 | 1°441 | 0°514 | W 1 |
| T 2 | 16 44 51 | 12°14'14 | 17°27 | 18°59 | 27°24 | 29°5 5 | 10°M40 | 2°16 | 11°51 | 20°39 | 24°2 2 | 16°D43 | 15°36 | 1°47 | 0°19 | T 2 |
| F 3 | 16 48 47 | 13°11'45 | 29°47 | 20°23 | 28°28 | 29°36 | 10°34 | 2°24 | 11°52 | 20°40 | 24°3 3 | 16°D44 | 15°33 | 1°54 | 0°24 | F 3 |
| S 4 | 16 52 44 | 14°9'14 | 12°Y26 | 21°50 | 29°32 | 0°II 6 | 10°29 | 2°32 | 11°52 | 20°41 | 24°4 4 | 16°R45 | 15°30 | 2°1 1 | 0°30 | S 4 |
| S 5 | 16 56 40 | 15°6'43 | 25°29 | 23°19 | 0°837 | 0°37 | 10°24 | 2°39 | 11°53 | 20°42 | 24°5 5 | 16°45 | 15°27 | 2°8 8 | 0°35 | S 5 |
| M 6 | 17 0 37 | 16°4'11 | 8°58 | 24°51 | 1°41 | 1°8 8 | 10°19 | 2°47 | 11°53 | 20°43 | 24°6 6 | 16°42 | 15°24 | 2°14 | 0°41 | M 6 |
| T 7 | 17 4 34 | 17°1'38 | 22°55 | 26°26 | 2°46 | 1°39 | 10°14 | 2°55 | 11°54 | 20°44 | 24°6 6 | 16°38 | 15°20 | 2°21 | 0°46 | T 7 |
| W 8 | 17 8 30 | 17°59'05 | 7°II16 | 28°3 3 | 3°51 | 2°10 | 10°9 9 | 3°2 2 | 11°54 | 20°45 | 24°7 7 | 16°31 | 15°17 | 2°28 | 0°52 | W 8 |
| T 9 | 17 12 27 | 18°56'31 | 21°58 | 29°43 | 4°56 | 2°41 | 10°4 4 | 3°10 | 11°55 | 20°47 | 24°8 8 | 16°23 | 15°14 | 2°35 | 0°57 | T 9 |
| F 10 | 17 16 23 | 19°53'56 | 6°52 | 1°II26 | 6°2 2 | 3°12 | 10°0 0 | 3°17 | 11°55 | 20°48 | 24°9 9 | 16°13 | 15°11 | 2°41 | 1°3 3 | F 10 |
| S 11 | 17 20 20 | 20°51'20 | 21°51 | 3°11 | 7°7 7 | 3°44 | 9°55 | 3°25 | 11°55 | 20°49 | 24°10 | 16°4 4 | 15°8 8 | 2°48 | 1°8 8 | S 11 |
| S 12 | 17 24 16 | 21°48'43 | 6°04 | 4°58 | 8°13 | 4°15 | 9°51 | 3°32 | 11°55 | 20°50 | 24°11 | 15°57 | 15°4 4 | 2°55 | 1°14 | S 12 |
| M13 | 17 28 13 | 22°46'06 | 21°24 | 6°49 | 9°19 | 4°47 | 9°47 | 3°40 | 11°56 | 20°52 | 24°12 | 15°51 | 15°1 1 | 3°1 1 | 1°19 | M13 |
| T 14 | 17 32 9 | 23°43'27 | 5°II46 | 8°41 | 10°25 | 5°19 | 9°43 | 3°47 | 11°56 | 20°53 | 24°13 | 15°48 | 14°58 | 3°8 8 | 1°25 | T 14 |
| W15 | 17 36 6 | 24°40'47 | 19°47 | 10°36 | 11°31 | 5°51 | 9°40 | 3°55 | 11°R56 | 20°55 | 24°13 | 15°D46 | 14°55 | 3°15 | 1°31 | W15 |
| T 16 | 17 40 3 | 25°38'06 | 3°27 | 12°34 | 12°37 | 6°23 | 9°36 | 4°2 2 | 11°56 | 20°56 | 24°14 | 15°46 | 14°52 | 3°22 | 1°36 | T 16 |
| F 17 | 17 43 59 | 26°35'24 | 16°48 | 14°33 | 13°43 | 6°55 | 9°33 | 4°10 | 11°56 | 20°57 | 24°15 | 15°R47 | 14°49 | 3°28 | 1°42 | F 17 |
| S 18 | 17 47 56 | 27°32'41 | 29°53 | 16°35 | 14°50 | 7°27 | 9°29 | 4°17 | 11°55 | 20°59 | 24°16 | 15°46 | 14°45 | 3°35 | 1°47 | S 18 |
| S 19 | 17 51 52 | 28°29'58 | 12°M42 | 18°39 | 15°57 | 8°0 0 | 9°26 | 4°24 | 11°55 | 21°0 0 | 24°16 | 15°43 | 14°42 | 3°42 | 1°53 | S 19 |
| M20 | 17 55 49 | 29°27'14 | 25°20 | 20°44 | 17°3 3 | 8°32 | 9°24 | 4°32 | 11°55 | 21°2 2 | 24°17 | 15°38 | 14°39 | 3°48 | 1°59 | M20 |
| T 21 | 17 59 45 | 0°24'29 | 7°747 | 22°51 | 18°10 | 9°5 5 | 9°21 | 4°39 | 11°55 | 21°3 3 | 24°18 | 15°30 | 14°36 | 3°55 | 2°4 4 | T 21 |
| W22 | 18 3 42 | 1°21'44 | 20°5 5 | 25°0 0 | 19°17 | 9°38 | 9°18 | 4°46 | 11°55 | 21°5 5 | 24°18 | 15°19 | 14°33 | 4°2 2 | 2°10 | W22 |
| T 23 | 18 7 38 | 2°18'58 | 2°315 | 27°9 9 | 20°25 | 10°11 | 9°16 | 4°54 | 11°54 | 21°7 7 | 24°19 | 15°7 7 | 14°30 | 4°9 9 | 2°15 | T 23 |
| F 24 | 18 11 35 | 3°16'11 | 14°18 | 29°20 | 21°32 | 10°44 | 9°14 | 5°1 1 | 11°54 | 21°8 8 | 24°20 | 14°53 | 14°26 | 4°15 | 2°21 | F 24 |
| S 25 | 18 15 32 | 4°13'25 | 26°16 | 1°31 | 22°39 | 11°17 | 9°12 | 5°8 8 | 11°53 | 21°10 | 24°20 | 14°41 | 14°23 | 4°22 | 2°27 | S 25 |
| S 26 | 18 19 28 | 5°10'38 | 8°9 9 | 3°42 | 23°47 | 11°50 | 9°10 | 5°15 | 11°53 | 21°11 | 24°21 | 14°29 | 14°20 | 4°29 | 2°32 | S 26 |
| M27 | 18 23 25 | 6°7'51 | 19°59 | 5°54 | 24°55 | 12°24 | 9°9 9 | 5°22 | 11°52 | 21°13 | 24°22 | 14°20 | 14°17 | 4°35 | 2°38 | M27 |
| T 28 | 18 27 21 | 7°5'04 | 1°X51 | 8°5 5 | 26°2 2 | 12°57 | 9°7 7 | 5°29 | 11°52 | 21°15 | 24°22 | 14°13 | 14°14 | 4°42 | 2°44 | T 28 |
| W29 | 18 31 18 | 8°2'17 | 13°47 | 10°15 | 27°10 | 13°31 | 9°6 6 | 5°36 | 11°51 | 21°16 | 24°23 | 14°9 9 | 14°10 | 4°49 | 2°49 | W29 |
| T 30 | 18 35 14 | 8°59'29 | 25°X51 | 12°25 | 28°818 | 14°II 4 | 9°M 5 | 5°II43 | 11°X51 | 21°018 | 24°Y23 | 14°7 7 | 14°7 7 | 4°56 | 2°55 | T 30 |

Delta T = 88.51 sec

ASTRODIENST EPHEMERIS for the year 2089

geocentric

JULY 2089

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|---------------------|-------------------|---------------------|--------------------|---------------------|--------------------|--------------------|---------------------|---------------------|---------------------|-------------------|-------------------|--------------------|------------------|------|
| F 1 | 18 39 11 | 9 ⁵⁶ 42 | 8 ⁹ 9 | 14 ⁵³ 34 | 29 ⁸ 27 | 14 ³⁸ 38 | 9 ⁴ 4 | 5 ⁵⁰ 50 | 11 ⁵⁰ 50 | 21 ²⁰ 20 | 24 ²⁴ 24 | 14 ⁶ 6 | 14 ⁴ 4 | 5 ² 2 | 3 ⁰ 0 | F 1 |
| S 2 | 18 43 7 | 10 ⁵³ 55 | 20 ⁴⁵ | 16 ⁴² | 0 ³⁵ 35 | 15 ¹² | 9 ³ 3 | 5 ⁵⁷ | 11 ⁴⁹ 49 | 21 ²² | 24 ²⁴ | 14 ⁶ 6 | 14 ¹ 1 | 5 ⁹ 9 | 3 ⁶ 6 | S 2 |
| S 3 | 18 47 4 | 11 ⁵¹ 08 | 3 ⁴⁵ | 18 ⁴⁸ | 1 ⁴³ | 15 ⁴⁶ | 9 ³ 3 | 6 ⁴ | 11 ⁴⁸ | 21 ²³ | 24 ²⁵ | 14 ⁶ 6 | 13 ⁵⁸ | 5 ¹⁶ | 3 ¹² | S 3 |
| M 4 | 18 51 1 | 12 ⁴⁸ 22 | 17 ¹² | 20 ⁵³ | 2 ⁵² | 16 ²⁰ | 9 ² 2 | 6 ¹⁰ | 11 ⁴⁸ | 21 ²⁵ | 24 ²⁵ | 14 ³ 3 | 13 ⁵⁵ | 5 ²² | 3 ¹⁷ | M 4 |
| T 5 | 18 54 57 | 13 ⁴⁵ 35 | 1 ¹¹ 9 | 22 ⁵⁶ | 4 ⁰ 0 | 16 ⁵⁴ | 9 ² 2 | 6 ¹⁷ | 11 ⁴⁷ | 21 ²⁷ | 24 ²⁵ | 13 ⁵⁸ | 13 ⁵¹ | 5 ²⁹ | 3 ²³ | T 5 |
| W 6 | 18 58 54 | 14 ⁴² 49 | 15 ³⁵ | 24 ⁵⁸ | 5 ⁹ 9 | 17 ²⁸ | 9 ² 2 | 6 ²⁴ | 11 ⁴⁶ | 21 ²⁹ | 24 ²⁶ | 13 ⁵⁰ | 13 ⁴⁸ | 5 ³⁶ | 3 ²⁸ | W 6 |
| T 7 | 19 2 50 | 15 ⁴⁰ 03 | 0 ²⁵ | 26 ⁵⁸ | 6 ¹⁸ | 18 ³ 3 | 9 ² 2 | 6 ³¹ | 11 ⁴⁵ | 21 ³¹ | 24 ²⁶ | 13 ⁴¹ | 13 ⁴⁵ | 5 ⁴³ | 3 ³⁴ | T 7 |
| F 8 | 19 6 47 | 16 ³⁷ 17 | 15 ³³ | 28 ⁵⁶ | 7 ²⁶ | 18 ³⁷ | 9 ³ 3 | 6 ³⁷ | 11 ⁴⁴ | 21 ³³ | 24 ²⁷ | 13 ³⁰ | 13 ⁴² | 5 ⁴⁹ | 3 ⁴⁰ | F 8 |
| S 9 | 19 10 43 | 17 ³⁴ 31 | 0 ⁴⁷ | 0 ⁵² | 8 ³⁵ | 19 ¹² | 9 ³ 3 | 6 ⁴⁴ | 11 ⁴³ | 21 ³⁵ | 24 ²⁷ | 13 ¹⁹ | 13 ³⁹ | 5 ⁵⁶ | 3 ⁴⁵ | S 9 |
| S 10 | 19 14 40 | 18 ³¹ 46 | 15 ⁵⁸ | 2 ⁴⁶ | 9 ⁴⁴ | 19 ⁴⁷ | 9 ⁴ 4 | 6 ⁵⁰ | 11 ⁴² | 21 ³⁷ | 24 ²⁷ | 13 ¹⁰ | 13 ³⁶ | 6 ³ 3 | 3 ⁵¹ | S 10 |
| M 11 | 19 18 36 | 19 ²⁹ 00 | 0 ⁵⁵ | 4 ³⁹ | 10 ⁵⁴ | 20 ²¹ | 9 ⁵ 5 | 6 ⁵⁷ | 11 ⁴⁰ | 21 ³⁸ | 24 ²⁷ | 13 ³ 3 | 13 ³² | 6 ⁹ 9 | 3 ⁵⁶ | M 11 |
| T 12 | 19 22 33 | 20 ²⁶ 14 | 15 ³¹ | 6 ²⁹ | 12 ³ 3 | 20 ⁵⁶ | 9 ⁶ 6 | 7 ³ 3 | 11 ³⁹ | 21 ⁴⁰ | 24 ²⁸ | 12 ⁵⁹ | 13 ²⁹ | 6 ¹⁶ | 4 ² 2 | T 12 |
| W 13 | 19 26 30 | 21 ²³ 28 | 29 ⁴¹ | 8 ¹⁸ | 13 ¹² | 21 ³¹ | 9 ⁷ 7 | 7 ⁹ 9 | 11 ³⁸ | 21 ⁴² | 24 ²⁸ | 12 ⁵⁷ | 13 ²⁶ | 6 ²³ | 4 ⁷ 7 | W 13 |
| T 14 | 19 30 26 | 22 ²⁰ 42 | 13 ⁴⁶ | 10 ⁴ 4 | 14 ²¹ | 22 ⁶ 6 | 9 ⁹ 9 | 7 ¹⁶ | 11 ³⁷ | 21 ⁴⁴ | 24 ²⁸ | 12 ⁵⁶ | 13 ²³ | 6 ³⁰ | 4 ¹³ | T 14 |
| F 15 | 19 34 23 | 23 ¹⁷ 55 | 26 ⁴⁶ | 11 ⁴⁹ | 15 ³¹ | 22 ⁴¹ | 9 ¹⁰ 10 | 7 ²² | 11 ³⁵ | 21 ⁴⁶ | 24 ²⁸ | 12 ⁵⁶ | 13 ²⁰ | 6 ³⁶ | 4 ¹⁸ | F 15 |
| S 16 | 19 38 19 | 24 ¹⁵ 09 | 9 ⁴⁵ | 13 ³² | 16 ⁴⁰ | 23 ¹⁷ | 9 ¹² 12 | 7 ²⁸ | 11 ³⁴ | 21 ⁴⁸ | 24 ²⁹ | 12 ⁵⁶ | 13 ¹⁶ | 6 ⁴³ | 4 ²⁴ | S 16 |
| S 17 | 19 42 16 | 25 ¹² 23 | 22 ²⁶ | 15 ¹² | 17 ⁵⁰ | 23 ⁵² | 9 ¹⁴ 14 | 7 ³⁴ | 11 ³³ | 21 ⁵⁰ | 24 ²⁹ | 12 ⁵³ | 13 ¹³ | 6 ⁵⁰ | 4 ²⁹ | S 17 |
| M 18 | 19 46 12 | 26 ⁹ 38 | 4 ⁵² | 16 ⁵¹ | 19 ⁰ 0 | 24 ²⁷ | 9 ¹⁶ 16 | 7 ⁴⁰ | 11 ³¹ | 21 ⁵² | 24 ²⁹ | 12 ⁴⁸ | 13 ¹⁰ | 6 ⁵⁶ | 4 ³⁴ | M 18 |
| T 19 | 19 50 9 | 27 ⁶ 52 | 17 ⁸ | 18 ²⁸ | 20 ⁹ 9 | 25 ³ 3 | 9 ¹⁹ 19 | 7 ⁴⁶ | 11 ³⁰ | 21 ⁵⁴ | 24 ²⁹ | 12 ⁴⁰ | 13 ⁷ 7 | 7 ³ 3 | 4 ⁴⁰ | T 19 |
| W 20 | 19 54 5 | 28 ⁴ 06 | 29 ¹⁵ | 20 ³ 3 | 21 ¹⁹ | 25 ³⁸ | 9 ²¹ 21 | 7 ⁵² | 11 ²⁸ | 21 ⁵⁷ | 24 ²⁹ | 12 ³⁰ | 13 ⁴ 4 | 7 ¹⁰ | 4 ⁴⁵ | W 20 |
| T 21 | 19 58 2 | 29 ¹ 21 | 11 ¹⁶ | 21 ³⁶ | 22 ²⁹ | 26 ¹⁴ | 9 ²⁴ 24 | 7 ⁵⁸ | 11 ²⁷ | 21 ⁵⁹ | 24 ²⁹ | 12 ¹⁸ | 13 ¹ 1 | 7 ¹⁷ | 4 ⁵⁰ | T 21 |
| F 22 | 20 1 59 | 29 ⁵⁸ 37 | 23 ¹² | 23 ⁷ 7 | 23 ³⁹ | 26 ⁵⁰ | 9 ²⁷ 27 | 8 ⁴ 4 | 11 ²⁵ | 22 ¹ 1 | 24 ²⁹ | 12 ⁵ 5 | 12 ⁵⁷ | 7 ²³ | 4 ⁵⁶ | F 22 |
| S 23 | 20 5 55 | 0 ⁵⁵ 52 | 5 ⁴⁶ 6 | 24 ³⁶ | 24 ⁴⁹ | 27 ²⁶ | 9 ³⁰ 30 | 8 ¹⁰ 10 | 11 ²⁴ | 22 ³ 3 | 24 ²⁹ | 11 ⁵² | 12 ⁵⁴ | 7 ³⁰ | 5 ¹ 1 | S 23 |
| S 24 | 20 9 52 | 1 ⁵³ 09 | 16 ⁵⁷ | 26 ³ 3 | 26 ⁰ 0 | 28 ² 2 | 9 ³³ 33 | 8 ¹⁵ 15 | 11 ²² | 22 ⁵ 5 | 24 ²⁹ | 11 ⁴¹ | 12 ⁵¹ | 7 ³⁷ | 5 ⁶ 6 | S 24 |
| M 25 | 20 13 48 | 2 ⁵⁰ 26 | 28 ⁴⁹ | 27 ²⁸ | 27 ¹⁰ | 28 ³⁸ | 9 ³⁶ 36 | 8 ²¹ 21 | 11 ²⁰ | 22 ⁷ 7 | 24 ²⁹ | 11 ³² | 12 ⁴⁸ | 7 ⁴³ | 5 ¹² | M 25 |
| T 26 | 20 17 45 | 3 ⁴⁷ 43 | 10 ⁴² | 28 ⁵¹ | 28 ²⁰ | 29 ¹⁴ | 9 ⁴⁰ 40 | 8 ²⁶ 26 | 11 ¹⁸ | 22 ⁹ 9 | 24 ²⁹ | 11 ²⁵ | 12 ⁴⁵ | 7 ⁵⁰ | 5 ¹⁷ | T 26 |
| W 27 | 20 21 41 | 4 ⁴⁵ 02 | 22 ⁴¹ | 0 ¹² | 29 ³¹ | 29 ⁵⁰ | 9 ⁴³ 43 | 8 ³² 32 | 11 ¹⁷ | 22 ¹¹ | 24 ²⁹ | 11 ²¹ | 12 ⁴¹ | 7 ⁵⁷ | 5 ²² | W 27 |
| T 28 | 20 25 38 | 5 ⁴² 21 | 4 ⁴⁷ | 1 ³¹ | 0 ⁴¹ | 0 ⁴⁶ | 9 ⁴⁷ 47 | 8 ³⁷ 37 | 11 ¹⁵ | 22 ¹³ | 24 ²⁹ | 11 ²⁰ | 12 ³⁸ | 8 ³ 3 | 5 ²⁷ | T 28 |
| F 29 | 20 29 34 | 6 ³⁹ 41 | 17 ⁶ 6 | 2 ⁴⁸ | 1 ⁵² | 1 ² 2 | 9 ⁵¹ 51 | 8 ⁴³ 43 | 11 ¹³ | 22 ¹⁶ | 24 ²⁹ | 11 ¹⁹ | 12 ³⁵ | 8 ¹⁰ 10 | 5 ³² | F 29 |
| S 30 | 20 33 31 | 7 ³⁷ 02 | 29 ⁴² | 4 ² 2 | 3 ² 2 | 1 ³⁹ | 9 ⁵⁵ 55 | 8 ⁴⁸ 48 | 11 ¹¹ | 22 ¹⁸ | 24 ²⁹ | 11 ²⁰ | 12 ³² | 8 ¹⁷ 17 | 5 ³⁷ | S 30 |
| S 31 | 20 37 28 | 8 ³⁴ 25 | 12 ³⁹ | 5 ¹⁵ | 4 ¹³ | 2 ¹⁵ | 10 ⁰ 0 | 8 ⁵³ | 11 ⁹ 9 | 22 ²⁰ | 24 ²⁹ | 11 ²⁰ | 12 ²⁹ | 8 ²⁴ | 5 ⁴² | S 31 |

Delta T = 88.54 sec

AUGUST 2089

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|-----|----------|----------|-------|--------|-------|-------|-------|-------|--------|-------|--------|--------|-------|-------|------|-----|
| M 1 | 20 41 24 | 9♂31'48 | 26♂ 1 | 6♂25 | 5♂24 | 2♂52 | 10♂ 4 | 8♂58 | 11°R 7 | 22♂22 | 24°R29 | 11°R19 | 12♂26 | 8♂30 | 5♂47 | M 1 |
| T 2 | 20 45 21 | 10°29'13 | 9♂51 | 7°32 | 6°35 | 3°29 | 10° 9 | 9° 3 | 11°K 6 | 22°24 | 24°Y28 | 11♂16 | 12°22 | 8°37 | 5°52 | T 2 |
| W 3 | 20 49 17 | 11°26'39 | 24° 9 | 8°37 | 7°46 | 4° 5 | 10°14 | 9° 8 | 11° 4 | 22°26 | 24°28 | 11°10 | 12°19 | 8°44 | 5°57 | W 3 |
| T 4 | 20 53 14 | 12°24'05 | 8♂54 | 9°40 | 8°57 | 4°42 | 10°19 | 9°13 | 11° 2 | 22°29 | 24°28 | 11° 3 | 12°16 | 8°50 | 6° 2 | T 4 |
| F 5 | 20 57 10 | 13°21'33 | 23°59 | 10°39 | 10° 8 | 5°19 | 10°24 | 9°18 | 11° 0 | 22°31 | 24°28 | 10°55 | 12°13 | 8°57 | 6° 7 | F 5 |
| S 6 | 21 1 7 | 14°19'02 | 9♂15 | 11°36 | 11°19 | 5°56 | 10°29 | 9°22 | 10°58 | 22°33 | 24°27 | 10°46 | 12°10 | 9° 4 | 6°12 | S 6 |
| S 7 | 21 5 3 | 15°16'32 | 24°31 | 12°30 | 12°30 | 6°33 | 10°34 | 9°27 | 10°55 | 22°35 | 24°27 | 10°39 | 12° 7 | 9°11 | 6°17 | S 7 |
| M 8 | 21 9 0 | 16°14'03 | 9♂36 | 13°21 | 13°41 | 7°10 | 10°40 | 9°32 | 10°53 | 22°37 | 24°27 | 10°33 | 12° 3 | 9°17 | 6°22 | M 8 |
| T 9 | 21 12 57 | 17°11'35 | 24°22 | 14° 9 | 14°53 | 7°48 | 10°46 | 9°36 | 10°51 | 22°40 | 24°27 | 10°30 | 12° 0 | 9°24 | 6°26 | T 9 |
| W10 | 21 16 53 | 18° 9'07 | 8♂43 | 14°53 | 16° 4 | 8°25 | 10°52 | 9°41 | 10°49 | 22°42 | 24°26 | 10°D29 | 11°57 | 9°31 | 6°31 | W10 |
| T11 | 21 20 50 | 19° 6'41 | 22°36 | 15°33 | 17°16 | 9° 2 | 10°58 | 9°45 | 10°47 | 22°44 | 24°26 | 10°30 | 11°54 | 9°37 | 6°36 | T11 |
| F12 | 21 24 46 | 20° 4'15 | 6♂ 2 | 16°10 | 18°27 | 9°40 | 11° 4 | 9°49 | 10°45 | 22°46 | 24°25 | 10°31 | 11°51 | 9°44 | 6°40 | F12 |
| S13 | 21 28 43 | 21° 1'50 | 19° 4 | 16°43 | 19°39 | 10°17 | 11°10 | 9°53 | 10°43 | 22°49 | 24°25 | 10°R31 | 11°47 | 9°51 | 6°45 | S13 |
| S14 | 21 32 39 | 21°59'26 | 1♂44 | 17°12 | 20°51 | 10°55 | 11°16 | 9°57 | 10°40 | 22°51 | 24°25 | 10°31 | 11°44 | 9°58 | 6°49 | S14 |
| M15 | 21 36 36 | 22°57'03 | 14° 7 | 17°36 | 22° 2 | 11°33 | 11°23 | 10° 1 | 10°38 | 22°53 | 24°24 | 10°29 | 11°41 | 10° 4 | 6°54 | M15 |
| T16 | 21 40 32 | 23°54'41 | 26°18 | 17°56 | 23°14 | 12°10 | 11°30 | 10° 5 | 10°36 | 22°55 | 24°24 | 10°24 | 11°38 | 10°11 | 6°58 | T16 |
| W17 | 21 44 29 | 24°52'20 | 8♂19 | 18°10 | 24°26 | 12°48 | 11°37 | 10° 9 | 10°34 | 22°57 | 24°23 | 10°18 | 11°35 | 10°18 | 7° 3 | W17 |
| T18 | 21 48 26 | 25°50'00 | 20°14 | 18°20 | 25°38 | 13°26 | 11°44 | 10°13 | 10°31 | 23° 0 | 24°23 | 10°11 | 11°32 | 10°24 | 7° 7 | T18 |
| F19 | 21 52 22 | 26°47'41 | 2♂ 7 | 18°R24 | 26°50 | 14° 4 | 11°51 | 10°16 | 10°29 | 23° 2 | 24°22 | 10° 3 | 11°28 | 10°31 | 7°11 | F19 |
| S20 | 21 56 19 | 27°45'23 | 13°59 | 18°23 | 28° 2 | 14°42 | 11°58 | 10°20 | 10°27 | 23° 4 | 24°22 | 9°55 | 11°25 | 10°38 | 7°15 | S20 |
| S21 | 22 0 15 | 28°43'07 | 25°51 | 18°17 | 29°14 | 15°20 | 12° 5 | 10°23 | 10°24 | 23° 6 | 24°21 | 9°48 | 11°22 | 10°44 | 7°20 | S21 |
| M22 | 22 4 12 | 29°40'52 | 7°K47 | 18° 4 | 0♂26 | 15°59 | 12°13 | 10°27 | 10°22 | 23° 9 | 24°21 | 9°42 | 11°19 | 10°51 | 7°24 | M22 |
| T23 | 22 8 8 | 0♂38'38 | 19°47 | 17°46 | 1°39 | 16°37 | 12°21 | 10°30 | 10°20 | 23°11 | 24°20 | 9°38 | 11°16 | 10°58 | 7°28 | T23 |
| W24 | 22 12 5 | 1°36'26 | 1°Y53 | 17°22 | 2°51 | 17°15 | 12°28 | 10°33 | 10°17 | 23°13 | 24°19 | 9°36 | 11°13 | 11° 5 | 7°32 | W24 |
| T25 | 22 16 1 | 2°34'15 | 14° 9 | 16°52 | 4° 3 | 17°54 | 12°36 | 10°36 | 10°15 | 23°15 | 24°19 | 9°D36 | 11° 9 | 11°11 | 7°36 | T25 |
| F26 | 22 19 58 | 3°32'07 | 26°36 | 16°17 | 5°16 | 18°32 | 12°44 | 10°39 | 10°13 | 23°17 | 24°18 | 9°37 | 11° 6 | 11°18 | 7°40 | F26 |
| S27 | 22 23 55 | 4°29'59 | 9♂17 | 15°37 | 6°28 | 19°11 | 12°52 | 10°42 | 10°10 | 23°20 | 24°17 | 9°39 | 11° 3 | 11°25 | 7°44 | S27 |
| S28 | 22 27 51 | 5°27'54 | 22°17 | 14°51 | 7°41 | 19°50 | 13° 1 | 10°45 | 10° 8 | 23°22 | 24°17 | 9°40 | 11° 0 | 11°31 | 7°47 | S28 |
| M29 | 22 31 48 | 6°25'50 | 5♂37 | 14° 2 | 8°53 | 20°28 | 13° 9 | 10°47 | 10° 6 | 23°24 | 24°16 | 9°R41 | 10°57 | 11°38 | 7°51 | M29 |
| T30 | 22 35 44 | 7°23'49 | 19°20 | 13°10 | 10° 6 | 21° 7 | 13°18 | 10°50 | 10° 3 | 23°26 | 24°15 | 9°40 | 10°53 | 11°45 | 7°55 | T30 |
| W31 | 22 39 41 | 8♂21'49 | 3♂27 | 12♂15 | 11♂19 | 21♂46 | 13♂26 | 10♂52 | 10°K 1 | 23♂28 | 24°Y15 | 9♂38 | 10♂50 | 11♂51 | 7♂59 | W31 |

ASTRODIENST EPHEMERIS for the year 2089

geocentric

SEPTEMBER 2089

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------|--------------------|--------------------|-------------------|--------------------|--------------------|-------------------|------|
| T 1 | 22 43 37 | 9 ^h 19'51 | 17 ^h 57 | 11°R19 | 12 ^h 32 | 22 ^h 25 | 13 ^h 35 | 10 ^h 55 | 9°R58 | 23 ^h 30 | 24°R14 | 9°R35 | 10 ^h 47 | 11 ^h 58 | 8 ^h 2 | T 1 |
| F 2 | 22 47 34 | 10°17'55 | 2 ^h 46 | 10 ^h 22 | 13°45 | 23° 4 | 13°44 | 10°57 | 9 ^h 56 | 23°33 | 24°Y13 | 9 ^h 31 | 10°44 | 12° 5 | 8° 6 | F 2 |
| S 3 | 22 51 30 | 11°16'01 | 17°48 | 9°26 | 14°57 | 23°43 | 13°53 | 10°59 | 9°54 | 23°35 | 24°12 | 9°27 | 10°41 | 12°12 | 8° 9 | S 3 |
| S 4 | 22 55 27 | 12°14'08 | 2 ^h 53 | 8°33 | 16°10 | 24°22 | 14° 2 | 11° 1 | 9°51 | 23°37 | 24°11 | 9°24 | 10°38 | 12°18 | 8°12 | S 4 |
| M 5 | 22 59 24 | 13°12'18 | 17°52 | 7°43 | 17°23 | 25° 2 | 14°11 | 11° 3 | 9°49 | 23°39 | 24°11 | 9°21 | 10°34 | 12°25 | 8°16 | M 5 |
| T 6 | 23 3 20 | 14°10'29 | 2 ^h 37 | 6°57 | 18°37 | 25°41 | 14°20 | 11° 5 | 9°46 | 23°41 | 24°10 | 9°D20 | 10°31 | 12°32 | 8°19 | T 6 |
| W 7 | 23 7 17 | 15° 8'41 | 17° 1 | 6°17 | 19°50 | 26°21 | 14°30 | 11° 7 | 9°44 | 23°43 | 24° 9 | 9°20 | 10°28 | 12°38 | 8°22 | W 7 |
| T 8 | 23 11 13 | 16° 6'55 | 1 ^h 0 | 5°44 | 21° 3 | 27° 0 | 14°39 | 11° 8 | 9°42 | 23°45 | 24° 8 | 9°21 | 10°25 | 12°45 | 8°25 | T 8 |
| F 9 | 23 15 10 | 17° 5'11 | 14°33 | 5°18 | 22°16 | 27°40 | 14°49 | 11°10 | 9°39 | 23°47 | 24° 7 | 9°23 | 10°22 | 12°52 | 8°28 | F 9 |
| S 10 | 23 19 6 | 18° 3'28 | 27°40 | 5° 0 | 23°29 | 28°19 | 14°59 | 11°11 | 9°37 | 23°49 | 24° 6 | 9°24 | 10°18 | 12°58 | 8°31 | S 10 |
| S 11 | 23 23 3 | 19° 1'47 | 10 ^h 24 | 4°51 | 24°43 | 28°59 | 15° 8 | 11°13 | 9°35 | 23°51 | 24° 5 | 9°25 | 10°15 | 13° 5 | 8°34 | S 11 |
| M12 | 23 26 59 | 20° 0'07 | 22°49 | 4°D51 | 25°56 | 29°39 | 15°18 | 11°14 | 9°32 | 23°54 | 24° 5 | 9°R25 | 10°12 | 13°12 | 8°37 | M12 |
| T 13 | 23 30 56 | 20°58'29 | 5 ^h 0 | 5° 0 | 27°10 | 0 ^h 19 | 15°28 | 11°15 | 9°30 | 23°56 | 24° 4 | 9°24 | 10° 9 | 13°19 | 8°40 | T 13 |
| W14 | 23 34 52 | 21°56'52 | 16°59 | 5°18 | 28°23 | 0°59 | 15°38 | 11°16 | 9°27 | 23°58 | 24° 3 | 9°23 | 10° 6 | 13°25 | 8°43 | W14 |
| T 15 | 23 38 49 | 22°55'17 | 28°53 | 5°45 | 29°37 | 1°38 | 15°49 | 11°17 | 9°25 | 24° 0 | 24° 2 | 9°21 | 10° 3 | 13°32 | 8°45 | T 15 |
| F 16 | 23 42 46 | 23°53'44 | 10 ^h 44 | 6°22 | 0 ^h 50 | 2°19 | 15°59 | 11°18 | 9°23 | 24° 2 | 24° 1 | 9°19 | 9°59 | 13°39 | 8°48 | F 16 |
| S 17 | 23 46 42 | 24°52'12 | 22°37 | 7° 6 | 2° 4 | 2°59 | 16° 9 | 11°18 | 9°21 | 24° 4 | 24° 0 | 9°16 | 9°56 | 13°45 | 8°51 | S 17 |
| S 18 | 23 50 39 | 25°50'42 | 4 ^h 33 | 7°59 | 3°18 | 3°39 | 16°20 | 11°19 | 9°18 | 24° 6 | 23°59 | 9°14 | 9°53 | 13°52 | 8°53 | S 18 |
| M19 | 23 54 35 | 26°49'14 | 16°35 | 8°59 | 4°31 | 4°19 | 16°30 | 11°19 | 9°16 | 24° 7 | 23°58 | 9°13 | 9°50 | 13°59 | 8°55 | M19 |
| T 20 | 23 58 32 | 27°47'47 | 28°46 | 10° 6 | 5°45 | 5° 0 | 16°41 | 11°20 | 9°14 | 24° 9 | 23°57 | 9°12 | 9°47 | 14° 5 | 8°58 | T 20 |
| W21 | 0 2 28 | 28°46'23 | 11°Y 6 | 11°20 | 6°59 | 5°40 | 16°52 | 11°20 | 9°12 | 24°11 | 23°56 | 9°D12 | 9°44 | 14°12 | 9° 0 | W21 |
| T 22 | 0 6 25 | 29°45'00 | 23°37 | 12°40 | 8°13 | 6°20 | 17° 2 | 11°20 | 9° 9 | 24°13 | 23°55 | 9°12 | 9°40 | 14°19 | 9° 2 | T 22 |
| F 23 | 0 10 21 | 0 ^h 43'40 | 6 ^h 20 | 14° 5 | 9°27 | 7° 1 | 17°13 | 11°R20 | 9° 7 | 24°15 | 23°54 | 9°13 | 9°37 | 14°26 | 9° 4 | F 23 |
| S 24 | 0 14 18 | 1°42'22 | 19°17 | 15°34 | 10°41 | 7°42 | 17°24 | 11°20 | 9° 5 | 24°17 | 23°53 | 9°14 | 9°34 | 14°32 | 9° 6 | S 24 |
| S 25 | 0 18 15 | 2°41'06 | 2 ^h 18 | 17° 7 | 11°55 | 8°22 | 17°35 | 11°20 | 9° 3 | 24°19 | 23°52 | 9°14 | 9°31 | 14°39 | 9° 8 | S 25 |
| M26 | 0 22 11 | 3°39'52 | 15°55 | 18°44 | 13° 9 | 9° 3 | 17°46 | 11°19 | 9° 1 | 24°21 | 23°51 | 9°15 | 9°28 | 14°46 | 9°10 | M26 |
| T 27 | 0 26 8 | 4°38'40 | 29°39 | 20°24 | 14°23 | 9°44 | 17°58 | 11°19 | 8°59 | 24°22 | 23°49 | 9°R15 | 9°24 | 14°52 | 9°12 | T 27 |
| W28 | 0 30 4 | 5°37'31 | 13 ^h 38 | 22° 5 | 15°37 | 10°25 | 18° 9 | 11°18 | 8°57 | 24°24 | 23°48 | 9°15 | 9°21 | 14°59 | 9°13 | W28 |
| T 29 | 0 34 1 | 6°36'24 | 27°54 | 23°49 | 16°51 | 11° 6 | 18°20 | 11°18 | 8°55 | 24°26 | 23°47 | 9°15 | 9°18 | 15° 6 | 9°15 | T 29 |
| F 30 | 0 37 57 | 7 ^h 35'20 | 12 ^h 22 | 25 ^h 34 | 18 ^h 5 | 11 ^h 47 | 18 ^h 32 | 11 ^h 17 | 8 ^h 53 | 24 ^h 28 | 23 ^h 46 | 9 ^h 15 | 9 ^h 15 | 15 ^h 12 | 9 ^h 17 | F 30 |

Delta T = 88.61 sec

OCTOBER 2089

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|---------|----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------|--------------------|---------------------|-------------------|-------------------|--------------------|-------------------|------|
| S 1 | 0 41 54 | 8 ^h 34'17 | 26 ^h 59 | 27 ^h 20 | 19 ^h 20 | 12 ^h 28 | 18 ^h 43 | 11°R16 | 8°R51 | 24 ^h 29 | 23°R45 | 9°R14 | 9 ^h 12 | 15 ^h 19 | 9 ^h 18 | S 1 |
| S 2 | 0 45 50 | 9°33'17 | 11 ^h 40 | 29° 7 | 20°34 | 13° 9 | 18°55 | 11 ^h 15 | 8 ^h 49 | 24°31 | 23°Y44 | 9°D14 | 9° 9 | 15°26 | 9°19 | S 2 |
| M 3 | 0 49 47 | 10°32'19 | 26°19 | 0 ^h 55 | 21°48 | 13°50 | 19° 6 | 11°14 | 8°47 | 24°33 | 23°43 | 9 ^h 14 | 9° 5 | 15°33 | 9°21 | M 3 |
| T 4 | 0 53 44 | 11°31'23 | 10 ^h 49 | 2°42 | 23° 3 | 14°32 | 19°18 | 11°13 | 8°45 | 24°34 | 23°42 | 9°R15 | 9° 2 | 15°39 | 9°22 | T 4 |
| W 5 | 0 57 40 | 12°30'29 | 25° 4 | 4°30 | 24°17 | 15°13 | 19°30 | 11°11 | 8°43 | 24°36 | 23°41 | 9°14 | 8°59 | 15°46 | 9°23 | W 5 |
| T 6 | 1 1 37 | 13°29'38 | 8 ^h 59 | 6°18 | 25°32 | 15°55 | 19°42 | 11°10 | 8°41 | 24°38 | 23°40 | 9°14 | 8°56 | 15°53 | 9°24 | T 6 |
| F 7 | 1 5 33 | 14°28'48 | 22°32 | 8° 5 | 26°46 | 16°36 | 19°53 | 11° 9 | 8°39 | 24°39 | 23°38 | 9°14 | 8°53 | 15°59 | 9°25 | F 7 |
| S 8 | 1 9 30 | 15°28'00 | 5 ^h 42 | 9°52 | 28° 1 | 17°18 | 20° 5 | 11° 7 | 8°38 | 24°41 | 23°37 | 9°13 | 8°50 | 16° 6 | 9°26 | S 8 |
| S 9 | 1 13 26 | 16°27'13 | 18°30 | 11°39 | 29°15 | 17°59 | 20°17 | 11° 5 | 8°36 | 24°42 | 23°36 | 9°12 | 8°46 | 16°13 | 9°27 | S 9 |
| M10 | 1 17 23 | 17°26'29 | 0 ^h 59 | 13°25 | 0 ^h 30 | 18°41 | 20°30 | 11° 3 | 8°34 | 24°44 | 23°35 | 9°11 | 8°43 | 16°19 | 9°27 | M10 |
| T 11 | 1 21 19 | 18°25'46 | 13°11 | 15°10 | 1°45 | 19°23 | 20°42 | 11° 1 | 8°32 | 24°45 | 23°34 | 9°D11 | 8°40 | 16°26 | 9°28 | T 11 |
| W12 | 1 25 16 | 19°25'05 | 25°11 | 16°55 | 2°59 | 20° 5 | 20°54 | 10°59 | 8°31 | 24°47 | 23°33 | 9°11 | 8°37 | 16°33 | 9°29 | W12 |
| T 13 | 1 29 12 | 20°24'26 | 7 ^h 5 | 18°40 | 4°14 | 20°47 | 21° 6 | 10°57 | 8°29 | 24°48 | 23°32 | 9°11 | 8°34 | 16°39 | 9°29 | T 13 |
| F 14 | 1 33 9 | 21°23'49 | 18°56 | 20°23 | 5°29 | 21°29 | 21°18 | 10°55 | 8°28 | 24°50 | 23°30 | 9°12 | 8°30 | 16°46 | 9°29 | F 14 |
| S 15 | 1 37 6 | 22°23'13 | 0 ^h 49 | 22° 6 | 6°43 | 22°11 | 21°31 | 10°53 | 8°26 | 24°51 | 23°29 | 9°14 | 8°27 | 16°53 | 9°30 | S 15 |
| S 16 | 1 41 2 | 23°22'39 | 12°49 | 23°48 | 7°58 | 22°53 | 21°43 | 10°50 | 8°25 | 24°52 | 23°28 | 9°15 | 8°24 | 17° 0 | 9°30 | S 16 |
| M17 | 1 44 59 | 24°22'07 | 24°58 | 25°30 | 9°13 | 23°35 | 21°56 | 10°48 | 8°23 | 24°54 | 23°27 | 9°16 | 8°21 | 17° 6 | 9°30 | M17 |
| T 18 | 1 48 55 | 25°21'37 | 7 ^h Y19 | 27°11 | 10°28 | 24°18 | 22° 8 | 10°45 | 8°22 | 24°55 | 23°26 | 9°R16 | 8°18 | 17°13 | 9°R30 | T 18 |
| W19 | 1 52 52 | 26°21'09 | 19°55 | 28°51 | 11°43 | 25° 0 | 22°21 | 10°42 | 8°20 | 24°56 | 23°25 | 9°16 | 8°15 | 17°20 | 9°30 | W19 |
| T 20 | 1 56 48 | 27°20'43 | 2 ^h 46 | 0 ^h 31 | 12°57 | 25°42 | 22°33 | 10°40 | 8°19 | 24°58 | 23°24 | 9°15 | 8°11 | 17°26 | 9°30 | T 20 |
| F 21 | 2 0 45 | 28°20'19 | 15°52 | 2° 9 | 14°12 | 26°25 | 22°46 | 10°37 | 8°18 | 24°59 | 23°22 | 9°13 | 8° 8 | 17°33 | 9°30 | F 21 |
| S 22 | 2 4 41 | 29°19'57 | 29°13 | 3°48 | 15°27 | 27° 7 | 22°58 | 10°34 | 8°16 | 25° 0 | 23°21 | 9°10 | 8° 5 | 17°40 | 9°30 | S 22 |
| S 23 | 2 8 38 | 0 ^h 19'37 | 12 ^h 47 | 5°25 | 16°42 | 27°50 | 23°11 | 10°31 | 8°15 | 25° 1 | 23°20 | 9° 7 | 8° 2 | 17°46 | 9°29 | S 23 |
| M24 | 2 12 35 | 1°19'20 | 26°32 | 7° 3 | 17°57 | 28°33 | 23°24 | 10°28 | 8°14 | 25° 2 | 23°19 | 9° 4 | 7°59 | 17°53 | 9°29 | M24 |
| T 25 | 2 16 31 | 2°19'04 | 10 ^h 27 | 8°39 | 19°12 | 29°15 | 23°37 | 10°24 | 8°13 | 25° 3 | 23°18 | 9° 2 | 7°55 | 18° 0 | 9°28 | T 25 |
| W26 | 2 20 28 | 3°18'51 | 24°29 | 10°15 | 20°27 | 29°58 | 23°49 | 10°21 | 8°12 | 25° 4 | 23°17 | 9° 0 | 7°52 | 18° 6 | 9°28 | W26 |
| T 27 | 2 24 24 | 4°18'40 | 8 ^h 28 | 11°50 | 21°42 | 0 ^h 41 | 24° 2 | 10°17 | 8°11 | 25° 5 | 23°16 | 9°D 0 | 7°49 | 18°13 | 9°27 | T 27 |
| F 28 | 2 28 21 | 5°18'32 | 22°50 | 13°25 | 22°57 | 1°24 | 24°15 | 10°14 | 8°10 | 25° 6 | 23°14 | 9° 1 | 7°46 | 18°20 | 9°26 | F 28 |
| S 29 | 2 32 17 | 6°18'25 | 7 ^h 4 | 15° 0 | 24°12 | 2° 7 | 24°28 | 10°10 | 8° 9 | 25° 7 | 23°13 | 9° 2 | 7°43 | 18°27 | 9°25 | S 29 |
| S 30 | 2 36 14 | 7°18'21 | 21°18 | 16°34 | 25°28 | 2°50 | 24°41 | 10° 7 | 8° 8 | 25° 8 | 23°12 | 9° 4 | 7°40 | 18°33 | 9°24 | S 30 |
| M31 | 2 40 10 | 8 ^h 18'19 | 5 ^h 29 | 18 ^h 7 | 26 ^h 43 | 3 ^h 33 | 24 ^h 54 | 10 ^h 3 | 8 ^h 7 | 25 ^h 9 | 23 ^h Y11 | 9°R 5 | 7 ^h 36 | 18 ^h 40 | 9 ^h 23 | M31 |

Delta T = 88.65 sec

ASTRODIENST EPHEMERIS for the year 2089

geocentric

NOVEMBER 2089

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|---------|-----------|--------|--------|--------|--------|--------|-------|--------|--------|--------|-------|-------|--------|-------|------|
| T 1 | 2 44 7 | 9♉18°19' | 19♊33 | 19♉40 | 27♊58 | 4♈16 | 25♉7 | 9°R59 | 8°R 6 | 25♉10 | 23°R10 | 9°R 4 | 7♊33 | 18♊47 | 9°R22 | T 1 |
| W 2 | 2 48 4 | 10°18'21" | 3♉27 | 21°12' | 29°13' | 5° 0' | 25°20' | 9♉55 | 8°R 6 | 25°11' | 23°R 9 | 9♊ 2 | 7°30' | 18°53' | 9♊21 | W 2 |
| T 3 | 2 52 0 | 11°18'25" | 17° 7' | 22°44' | 0♉28 | 5°43' | 25°33' | 9°51' | 8° 5' | 25°12' | 23° 8' | 8°59' | 7°27' | 19° 0' | 9°20' | T 3 |
| F 4 | 2 55 57 | 12°18'31" | 0♈30 | 24°16' | 1°43' | 6°26' | 25°46' | 9°47' | 8° 4' | 25°13' | 23° 7' | 8°54' | 7°24' | 19° 7' | 9°18' | F 4 |
| S 5 | 2 59 53 | 13°18'38" | 13°35' | 25°47' | 2°59' | 7°10' | 25°59' | 9°43' | 8° 4' | 25°13' | 23° 6' | 8°48' | 7°21' | 19°13' | 9°17' | S 5 |
| S 6 | 3 3 50 | 14°18'48" | 26°21' | 27°18' | 4°14' | 7°53' | 26°13' | 9°39' | 8° 3' | 25°14' | 23° 5' | 8°42' | 7°17' | 19°20' | 9°15' | S 6 |
| M 7 | 3 7 46 | 15°18'59" | 8♈50 | 28°48' | 5°29' | 8°37' | 26°26' | 9°35' | 8° 3' | 25°15' | 23° 4' | 8°36' | 7°14' | 19°27' | 9°14' | M 7 |
| T 8 | 3 11 43 | 16°19'11" | 21° 3' | 0♈18 | 6°44' | 9°21' | 26°39' | 9°31' | 8° 2' | 25°15' | 23° 3' | 8°32' | 7°11' | 19°33' | 9°12' | T 8 |
| W 9 | 3 15 39 | 17°19'25" | 3♈ 4' | 1°48' | 8° 0' | 10° 4' | 26°52' | 9°26' | 8° 2' | 25°16' | 23° 1' | 8°29' | 7° 8' | 19°40' | 9°10' | W 9 |
| T 10 | 3 19 36 | 18°19'40" | 14°57' | 3°17' | 9°15' | 10°48' | 27° 5' | 9°22' | 8° 2' | 25°17' | 23° 0' | 8°D27 | 7° 5' | 19°47' | 9° 8' | T 10 |
| F 11 | 3 23 33 | 19°19'57" | 26°47' | 4°45' | 10°30' | 11°32' | 27°19' | 9°17' | 8° 1' | 25°17' | 22°59' | 8°28' | 7° 1' | 19°53' | 9° 7' | F 11 |
| S 12 | 3 27 29 | 20°20'16" | 8♈40 | 6°13' | 11°46' | 12°16' | 27°32' | 9°13' | 8° 1' | 25°18' | 22°58' | 8°29' | 6°58' | 20° 0' | 9° 5' | S 12 |
| S 13 | 3 31 26 | 21°20'35" | 20°40' | 7°41' | 13° 1' | 13° 0' | 27°45' | 9° 8' | 8° 1' | 25°18' | 22°57' | 8°31' | 6°55' | 20° 7' | 9° 3' | S 13 |
| M14 | 3 35 22 | 22°20'57" | 2°R52 | 9° 8' | 14°16' | 13°44' | 27°59' | 9° 4' | 8° 1' | 25°19' | 22°56' | 8°R32 | 6°52' | 20°14' | 9° 0' | M14 |
| T 15 | 3 39 19 | 23°21'19" | 15°20' | 10°34' | 15°32' | 14°28' | 28°12' | 8°59' | 8° 0' | 25°19' | 22°55' | 8°32' | 6°49' | 20°20' | 8°58' | T 15 |
| W16 | 3 43 15 | 24°21'43" | 28° 8' | 12° 0' | 16°47' | 15°12' | 28°25' | 8°54' | 8° 0' | 25°20' | 22°55' | 8°30' | 6°46' | 20°27' | 8°56' | W16 |
| T 17 | 3 47 12 | 25°22'09" | 11♈17 | 13°25' | 18° 2' | 15°56' | 28°38' | 8°50' | 8°D 0' | 25°20' | 22°54' | 8°26' | 6°42' | 20°34' | 8°54' | T 17 |
| F 18 | 3 51 8 | 26°22'36" | 24°46' | 14°50' | 19°18' | 16°40' | 28°52' | 8°45' | 8° 0' | 25°20' | 22°53' | 8°19' | 6°39' | 20°40' | 8°51' | F 18 |
| S 19 | 3 55 5 | 27°23'05" | 8♉33 | 16°13' | 20°33' | 17°25' | 29° 5' | 8°40' | 8° 1' | 25°21' | 22°52' | 8°12' | 6°36' | 20°47' | 8°49' | S 19 |
| S 20 | 3 59 2 | 28°23'35" | 22°36' | 17°36' | 21°48' | 18° 9' | 29°18' | 8°35' | 8° 1' | 25°21' | 22°51' | 8° 3' | 6°33' | 20°54' | 8°46' | S 20 |
| M21 | 4 2 58 | 29°24'07" | 6♈49 | 18°58' | 23° 4' | 18°53' | 29°32' | 8°31' | 8° 1' | 25°21' | 22°50' | 7°55' | 6°30' | 21° 0' | 8°44' | M21 |
| T 22 | 4 6 55 | 0♈24'41" | 21° 7' | 20°18' | 24°19' | 19°38' | 29°45' | 8°26' | 8° 1' | 25°21' | 22°49' | 7°48' | 6°27' | 21° 7' | 8°41' | T 22 |
| W23 | 4 10 51 | 1°25'16" | 5♉25 | 21°38' | 25°35' | 20°22' | 29°58' | 8°21' | 8° 1' | 25°21' | 22°48' | 7°42' | 6°23' | 21°14' | 8°38' | W23 |
| T 24 | 4 14 48 | 2°25'54" | 19°40' | 22°55' | 26°50' | 21° 7' | 0♈12 | 8°16' | 8° 2' | 25°21' | 22°47' | 7°40' | 6°20' | 21°20' | 8°35' | T 24 |
| F 25 | 4 18 44 | 3°26'32" | 3♉49 | 24°12' | 28° 5' | 21°52' | 0°25' | 8°11' | 8° 2' | 25°22' | 22°46' | 7°D39 | 6°17' | 21°27' | 8°32' | F 25 |
| S 26 | 4 22 41 | 4°27'13" | 17°50' | 25°26' | 29°21' | 22°36' | 0°38' | 8° 6' | 8° 3' | 25°22' | 22°46' | 7°39' | 6°14' | 21°34' | 8°30' | S 26 |
| S 27 | 4 26 37 | 5°27'55" | 1♉44 | 26°38' | 0♈36 | 23°21' | 0°52' | 8° 1' | 8° 3' | 25°R22 | 22°45' | 7°R40 | 6°11' | 21°40' | 8°27' | S 27 |
| M28 | 4 30 34 | 6°28'39" | 15°29' | 27°48' | 1°52' | 24° 6' | 1° 5' | 7°56' | 8° 4' | 25°22' | 22°44' | 7°40' | 6° 7' | 21°47' | 8°23' | M28 |
| T 29 | 4 34 31 | 7°29'24" | 29° 6' | 28°54' | 3° 7' | 24°51' | 1°18' | 7°51' | 8° 4' | 25°22' | 22°43' | 7°38' | 6° 4' | 21°54' | 8°20' | T 29 |
| W30 | 4 38 27 | 8°30'11" | 12♉34 | 29°58' | 4♈23 | 25°36' | 1°32' | 7♉47 | 8°R 5 | 25°R21 | 22°R42 | 7♊33 | 6° 1' | 22°58' | 8°D17 | W30 |

Delta T = 88.68 sec

DECEMBER 2089

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|---------|-----------|--------|---------|--------|--------|-------|-------|-------|--------|--------|-------|-------|--------|-------|------|
| T 1 | 4 42 24 | 9♈30°59' | 25♉51 | 0♈58 | 5♈38 | 26°21' | 1♈45 | 7°R42 | 8°R 6 | 25°R21 | 22°R42 | 7°R26 | 5♊58 | 22°58' | 8°R14 | T 1 |
| F 2 | 4 46 20 | 10°31'48" | 8♈56 | 1°54' | 6°54' | 27° 6' | 1°58' | 7♉37 | 8° 7' | 25°R21 | 22°R41 | 7♊16 | 5°55' | 22°14' | 8♊11 | F 2 |
| S 3 | 4 50 17 | 11°32'39" | 21°54' | 2°44' | 8° 9' | 27°51' | 2°12' | 7°32' | 8° 7' | 25°21' | 22°40' | 7° 4' | 5°52' | 22°21' | 8° 7' | S 3 |
| S 4 | 4 54 13 | 12°33'31" | 4♈24 | 3°30' | 9°25' | 28°36' | 2°25' | 7°27' | 8° 8' | 25°21' | 22°40' | 6°51' | 5°48' | 22°27' | 8° 4' | S 4 |
| M 5 | 4 58 10 | 13°34'24" | 16°47' | 4° 9' | 10°40' | 29°21' | 2°38' | 7°22' | 8° 9' | 25°20' | 22°39' | 6°39' | 5°45' | 22°34' | 8° 1' | M 5 |
| T 6 | 5 2 6 | 14°35'18" | 28°57' | 4°41' | 11°56' | 0♈ 7' | 2°51' | 7°17' | 8°10' | 25°20' | 22°38' | 6°29' | 5°42' | 22°41' | 7°57' | T 6 |
| W 7 | 5 6 3 | 15°36'12" | 10♈56 | 5° 6' | 13°11' | 0°52' | 3° 5' | 7°12' | 8°11' | 25°20' | 22°38' | 6°21' | 5°39' | 22°47' | 7°54' | W 7 |
| T 8 | 5 10 0 | 16°37'07" | 22°47' | 5°22' | 14°27' | 1°37' | 3°18' | 7° 7' | 8°12' | 25°19' | 22°37' | 6°16' | 5°36' | 22°54' | 7°50' | T 8 |
| F 9 | 5 13 56 | 17°38'04" | 4♈36 | 5°R28 | 15°42' | 2°23' | 3°31' | 7° 3' | 8°13' | 25°19' | 22°36' | 6°13' | 5°33' | 23° 1' | 7°47' | F 9 |
| S 10 | 5 17 53 | 18°39'00" | 16°26' | 5°24' | 16°58' | 3° 8' | 3°44' | 6°58' | 8°14' | 25°19' | 22°36' | 6°D12 | 5°29' | 23° 7' | 7°43' | S 10 |
| S 11 | 5 21 49 | 19°39'58" | 28°24' | 5° 9' | 18°13' | 3°54' | 3°57' | 6°53' | 8°16' | 25°18' | 22°35' | 6°12' | 5°26' | 23°14' | 7°39' | S 11 |
| M12 | 5 25 46 | 20°40'56" | 10°R34 | 4°43' | 19°29' | 4°39' | 4°10' | 6°48' | 8°17' | 25°18' | 22°35' | 6°R12 | 5°23' | 23°21' | 7°36' | M12 |
| T 13 | 5 29 42 | 21°41'54" | 23° 3' | 4° 5' | 20°44' | 5°25' | 4°23' | 6°44' | 8°18' | 25°17' | 22°34' | 6°11' | 5°20' | 23°27' | 7°32' | T 13 |
| W14 | 5 33 39 | 22°42'54" | 5♈54 | 3°16' | 22° 0' | 6°10' | 4°37' | 6°39' | 8°20' | 25°17' | 22°34' | 6° 8' | 5°17' | 23°34' | 7°28' | W14 |
| T 15 | 5 37 35 | 23°43'54" | 19°11' | 2°17' | 23°15' | 6°56' | 4°50' | 6°34' | 8°21' | 25°16' | 22°33' | 6° 2' | 5°13' | 23°41' | 7°24' | T 15 |
| F 16 | 5 41 32 | 24°44'54" | 2♉54 | 1° 8' | 24°31' | 7°42' | 5° 3' | 6°30' | 8°23' | 25°15' | 22°33' | 5°53' | 5°10' | 23°47' | 7°21' | F 16 |
| S 17 | 5 45 29 | 25°45'55" | 17° 2' | 29°52 | 25°46' | 8°28' | 5°15' | 6°25' | 8°24' | 25°15' | 22°32' | 5°42' | 5° 7' | 23°54' | 7°17' | S 17 |
| S 18 | 5 49 25 | 26°46'57" | 1♉30 | 28°32' | 27° 2' | 9°13' | 5°28' | 6°21' | 8°26' | 25°14' | 22°32' | 5°30' | 5° 4' | 24° 1' | 7°13' | S 18 |
| M19 | 5 53 22 | 27°47'59" | 16°11' | 27° 9' | 28°17' | 9°59' | 5°41' | 6°16' | 8°27' | 25°13' | 22°32' | 5°18' | 5° 1' | 24° 7' | 7° 9' | M19 |
| T 20 | 5 57 18 | 28°49'02" | 0♉58 | 25°46' | 29°33' | 10°45' | 5°54' | 6°12' | 8°29' | 25°13' | 22°31' | 5° 7' | 4°58' | 24°14' | 7° 5' | T 20 |
| W21 | 6 1 15 | 29°50'06" | 15°41' | 24°27' | 0♈48 | 11°31' | 6° 7' | 6° 8' | 8°30' | 25°12' | 22°31' | 4°59' | 4°54' | 24°21' | 7° 1' | W21 |
| T 22 | 6 5 11 | 0♈51'11" | 0♉16 | 23°14' | 2° 4' | 12°17' | 6°20' | 6° 3' | 8°32' | 25°11' | 22°31' | 4°54' | 4°51' | 24°27' | 6°57' | T 22 |
| F 23 | 6 9 8 | 1°52'16" | 14°35' | 22° 9' | 3°19' | 13° 3' | 6°32' | 5°59' | 8°34' | 25°10' | 22°30' | 4°52' | 4°48' | 24°34' | 6°54' | F 23 |
| S 24 | 6 13 4 | 2°53'22" | 28°38' | 21°13' | 4°35' | 13°49' | 6°45' | 5°55' | 8°36' | 25° 9' | 22°30' | 4°51' | 4°45' | 24°41' | 6°50' | S 24 |
| S 25 | 6 17 1 | 3°54'29" | 12♊26 | 20°27' | 5°50' | 14°35' | 6°58' | 5°51' | 8°38' | 25° 8' | 22°30' | 4°51' | 4°42' | 24°48' | 6°46' | S 25 |
| M26 | 6 20 58 | 4°55'36" | 25°58' | 19°52' | 7° 6' | 15°22' | 7°10' | 5°47' | 8°40' | 25° 8' | 22°29' | 4°50' | 4°38' | 24°54' | 6°42' | M26 |
| T 27 | 6 24 54 | 5°56'45" | 9♉16 | 19°27' | 8°21' | 16° 8' | 7°23' | 5°43' | 8°42' | 25° 7' | 22°29' | 4°47' | 4°35' | 25° 1' | 6°38' | T 27 |
| W28 | 6 28 51 | 6°57'53" | 22°22' | 19°13' | 9°37' | 16°54' | 7°36' | 5°39' | 8°44' | 25° 6' | 22°29' | 4°41' | 4°32' | 25° 8' | 6°34' | W28 |
| T 29 | 6 32 47 | 7°59'03" | 5♈16 | 19°D 9' | 10°52' | 17°40' | 7°48' | 5°36' | 8°46' | 25° 5' | 22°29' | 4°32' | 4°29' | 25°14' | 6°30' | T 29 |
| F 30 | 6 36 44 | 9° 0'12" | 18° 0' | 19°15' | 12° 8' | 18°27' | 8° 0' | 5°32' | 8°48' | 25° 4' | 22°29' | 4°20' | 4°26' | 25°21' | 6°26' | F 30 |
| S 31 | 6 40 40 | 10° 1'22" | 0♈33 | 19°52' | 13°23' | 19°23' | 8°13' | 5♉28 | 8°R50 | 25°R 2 | 22°R29 | 4♊ 7 | 4♊23 | 25°58' | 6°D22 | S 31 |

Delta T = 88.72 sec