

Penumbral Lunar Eclipse of 2024 Mar 25

Ecliptic Conjunction = 07:01:28.5 TD (= 07:00:14.6 UT)

Greatest Eclipse = 07:13:59.2 TD (= 07:12:45.2 UT)

Penumbral Magnitude = 0.9557

P. Radius = 1.1803°

Gamma = 1.0609

Umbral Magnitude = -0.1325

U. Radius = 0.6457°

Axis = 0.9564°

Saros Series = 113

Member = 64 of 71

Sun at Greatest Eclipse (Geocentric Coordinates)

R.A. = 00h18m49.9s

Dec. = +02°02'16.6"

S.D. = 00°16'02.2"

H.P. = 00°00'08.8"

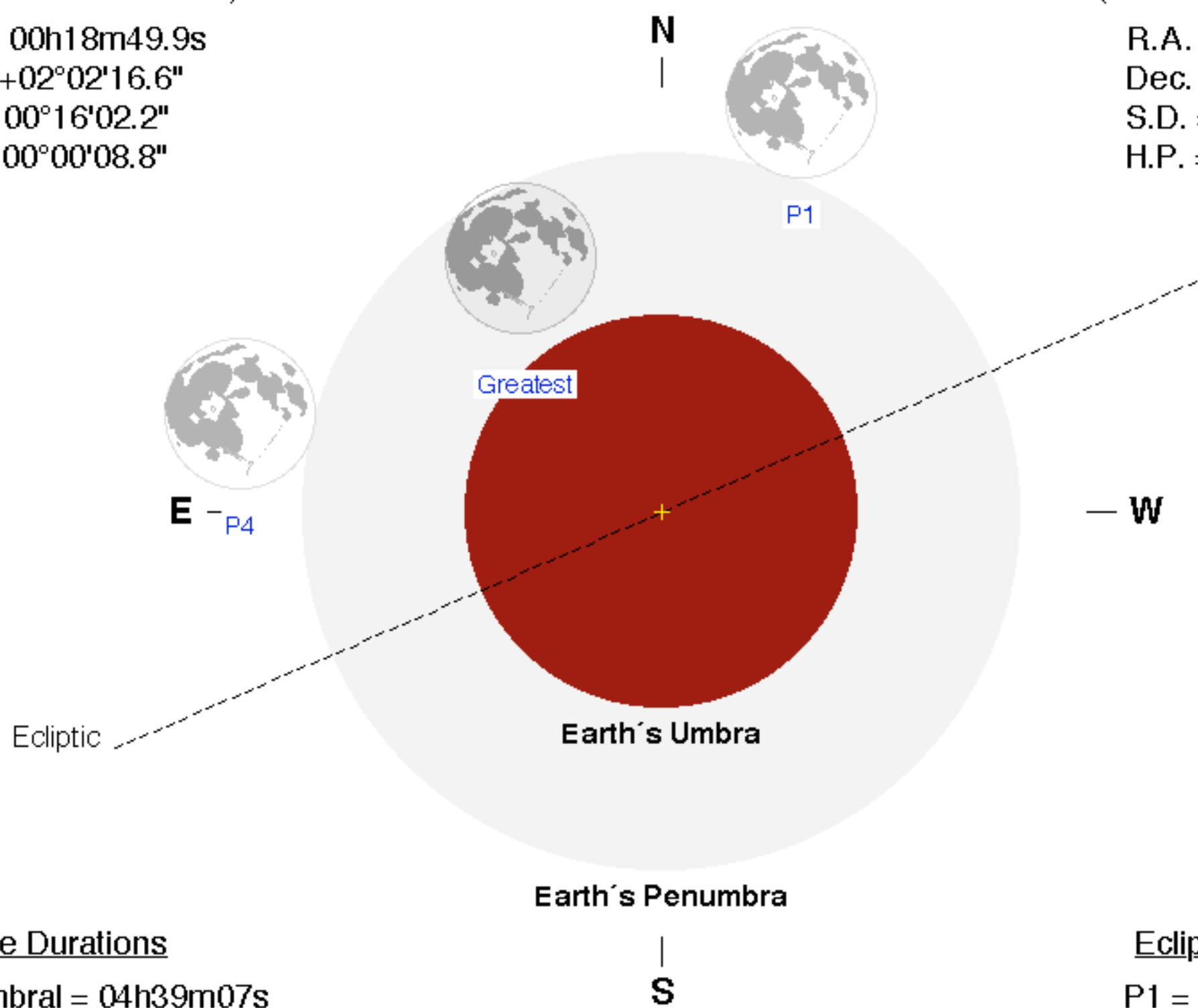
Moon at Greatest Eclipse (Geocentric Coordinates)

R.A. = 12h20m41.3s

Dec. = -01°12'05.4"

S.D. = 00°14'44.3"

H.P. = 00°54'05.4"



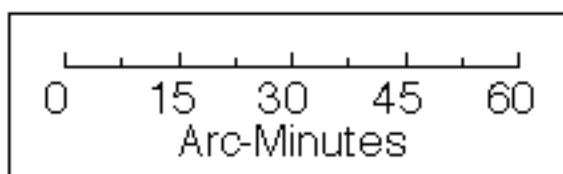
Eclipse Durations

Penumbral = 04h39m07s

Eclipse Contacts

P1 = 04:53:11 UT

P4 = 09:32:18 UT

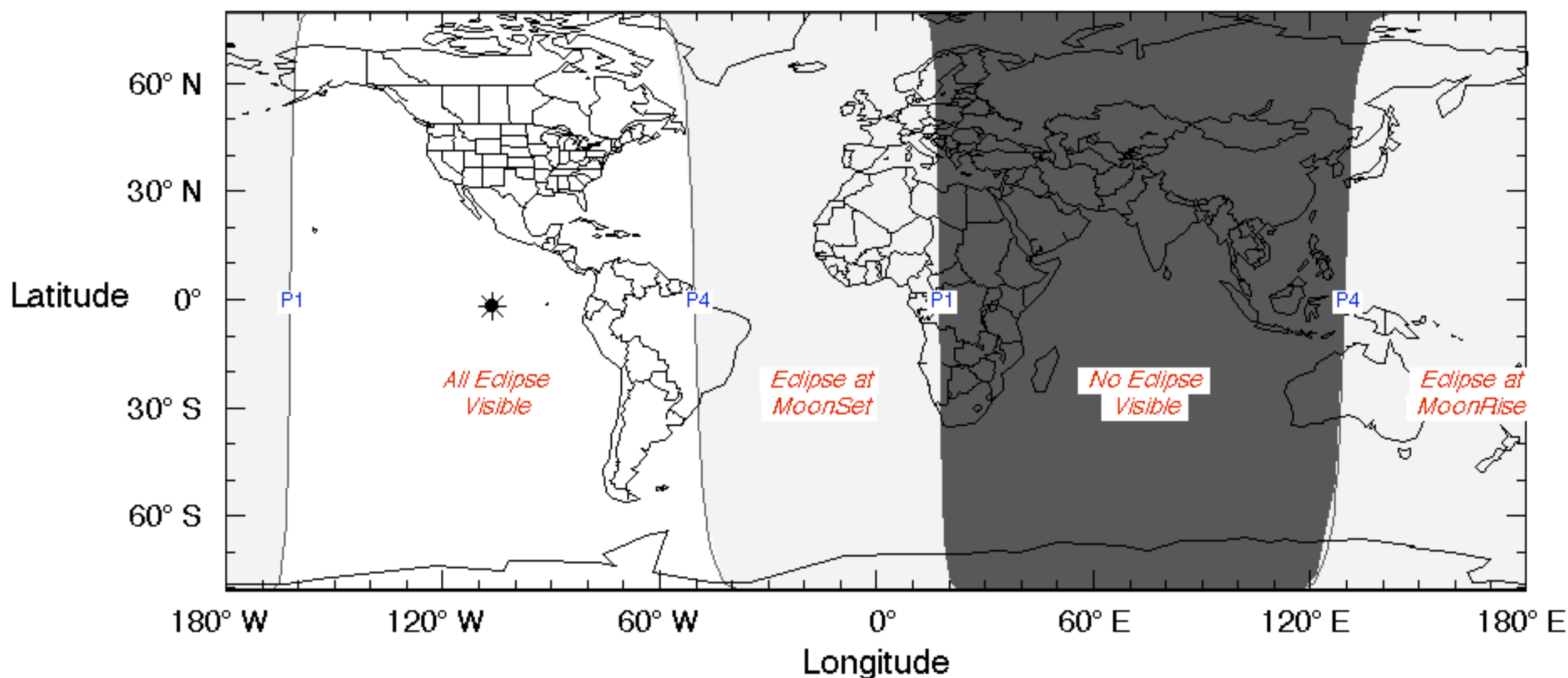


$\Delta T = 74$ s

Rule = CdT (Danjon)

Eph. = VSOP87/ELP2000-85

F. Espenak, NASA's GSFC
eclipse.gsfc.nasa.gov/eclipse.html



Partial Lunar Eclipse of 2024 Sep 18

Ecliptic Conjunction = 02:35:37.1 TD (= 02:34:22.9 UT)

Greatest Eclipse = 02:45:24.7 TD (= 02:44:10.5 UT)

Penumbral Magnitude = 1.0372

P. Radius = 1.3003°

Gamma = -0.9792

Umbral Magnitude = 0.0848

U. Radius = 0.7697°

Axis = 1.0010°

Saros Series = 118 Member = 52 of 74

Sun at Greatest Eclipse (Geocentric Coordinates)

R.A. = 11h44m09.8s

Dec. = +01°42'52.9"

S.D. = 00°15'55.0"

H.P. = 00°00'08.8"

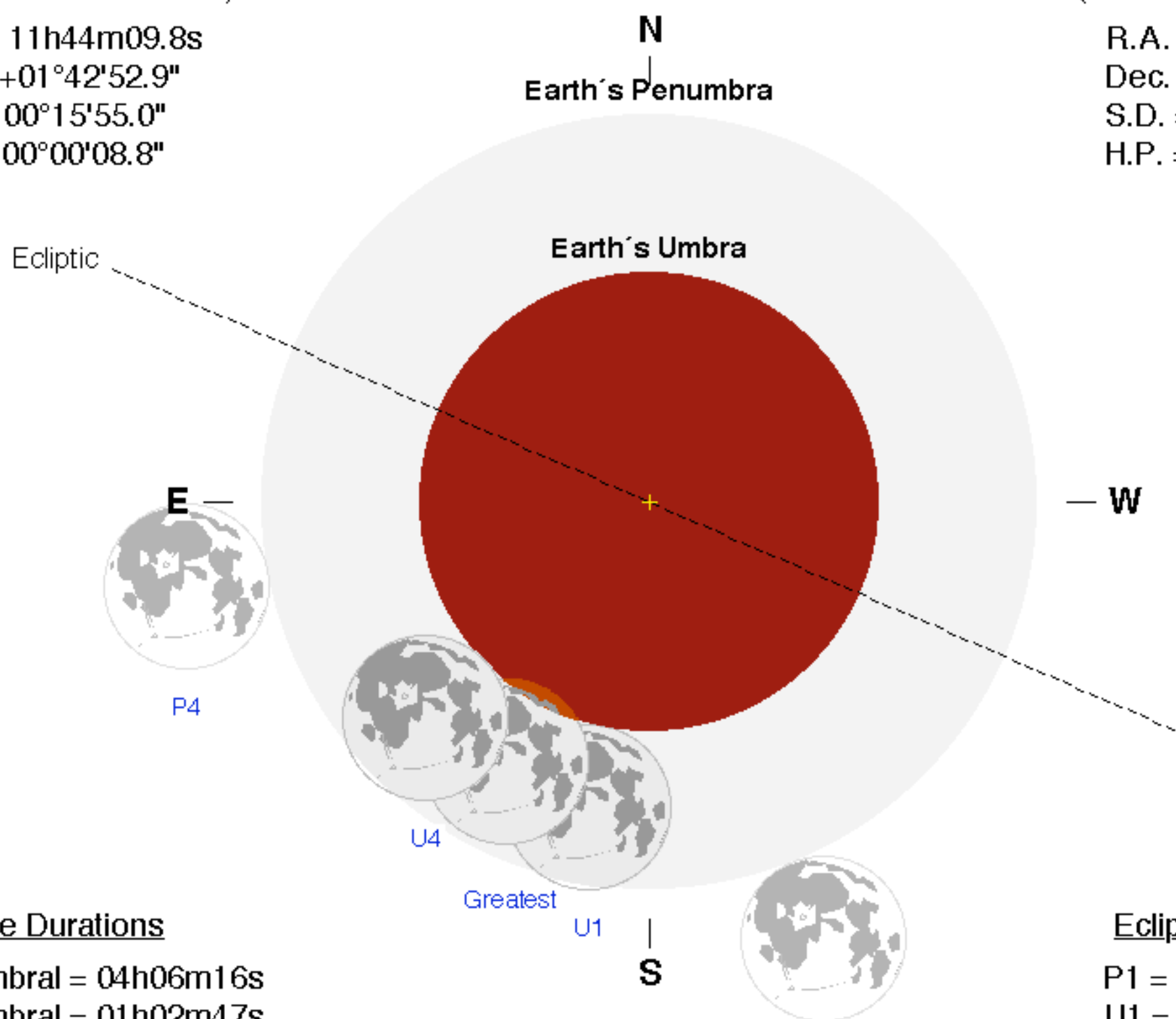
Moon at Greatest Eclipse (Geocentric Coordinates)

R.A. = 23h46m06.0s

Dec. = -02°35'26.8"

S.D. = 00°16'42.8"

H.P. = 01°01'20.4"



Eclipse Durations

Penumbral = 04h06m16s

Umbral = 01h02m47s

Eclipse Contacts

P1 = 00:41:02 UT

U1 = 02:12:48 UT

U4 = 03:15:35 UT

P4 = 04:47:18 UT

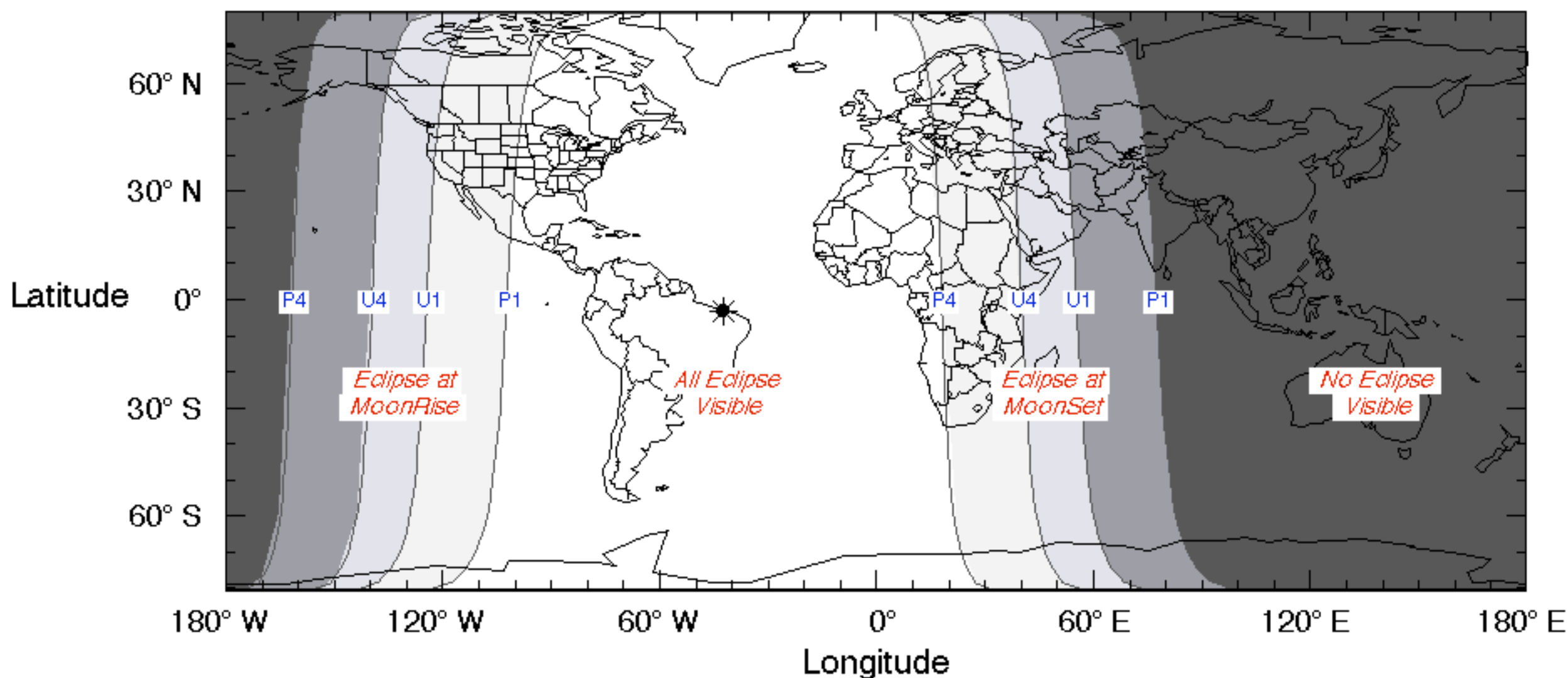
$\Delta T = 74$ s

Rule = CdT (Danjon)

Eph. = VSOP87/ELP2000-85

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Total Solar Eclipse of 2024 Apr 08

Geocentric Conjunction = 18:36:02.5 UT J.D. = 2460409.275029
 Greatest Eclipse = 18:17:13.1 UT J.D. = 2460409.261957

Eclipse Magnitude = 1.0565 Gamma = 0.3432

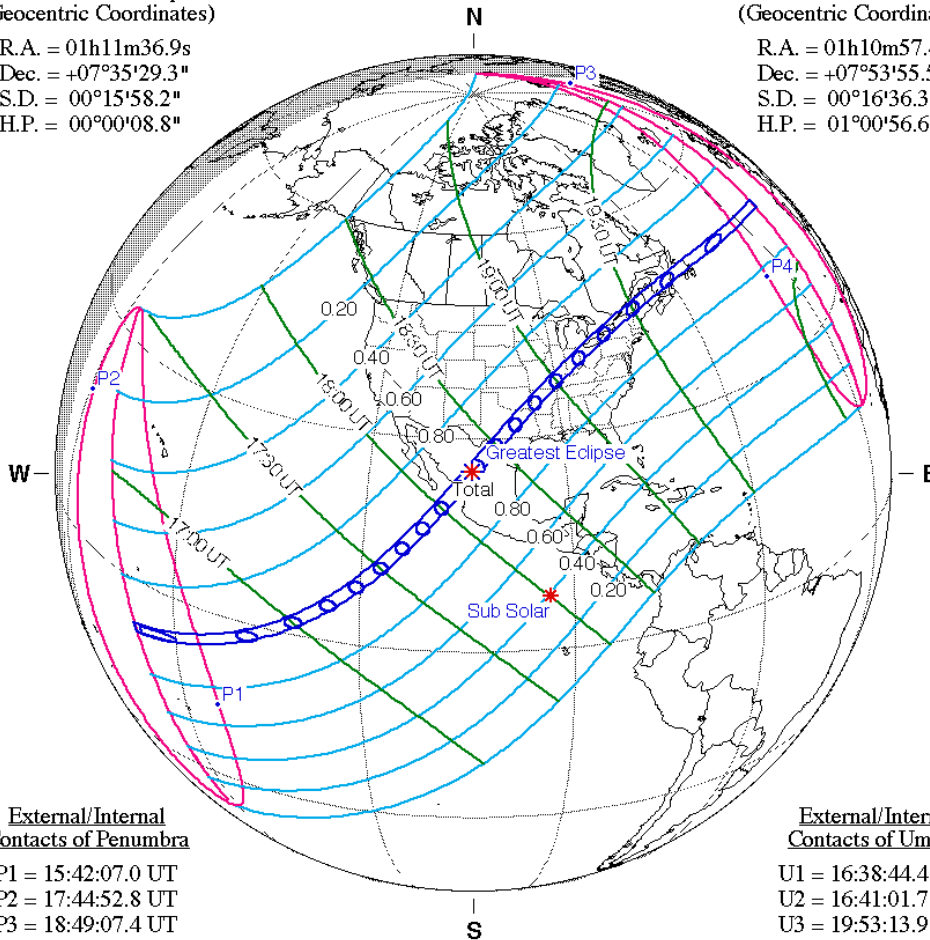
Saros Series = 139 Member = 30 of 71

Sun at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 01h11m36.9s
 Dec. = +07°35'29.3"
 S.D. = 00°15'58.2"
 H.P. = 00°00'08.8"

Moon at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 01h10m57.4s
 Dec. = +07°53'55.5"
 S.D. = 00°16'36.3"
 H.P. = 01°00'56.6"



External/Internal
Contacts of Penumbra

P1 = 15:42:07.0 UT
 P2 = 17:44:52.8 UT
 P3 = 18:49:07.4 UT
 P4 = 20:52:13.8 UT

External/Internal
Contacts of Umbra

U1 = 16:38:44.4 UT
 U2 = 16:41:01.7 UT
 U3 = 19:53:13.9 UT
 U4 = 19:55:29.1 UT

Local Circumstances at Greatest Eclipse

Lat. = 25°17.5'N Sun Alt. = 69.8°
 Long. = 104°07.2'W Sun Azm. = 149.4°
 Path Width = 197.5 km Duration = 04m28.1s

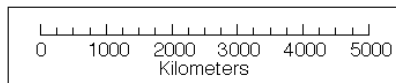
Ephemeris & Constants

Eph. = Newcomb/ILE
 $\Delta T = 81.2$ s
 $k1 = 0.2724880$
 $k2 = 0.2722810$
 $\Delta b = 0.0''$ $\Delta l = 0.0''$

Geocentric Libration
(Optical + Physical)

$l = 2.00^\circ$
 $b = -0.46^\circ$
 $c = -20.75^\circ$

Brown Lun. No. = 1253



F. Espenak, NASA's GSFC - Fri, Jul 2,
sunearth.gsfc.nasa.gov/eclipse/eclipse.html

Annular Solar Eclipse of 2024 Oct 02

Geocentric Conjunction = 19:07:53.1 UT J.D. = 2460586.297142
 Greatest Eclipse = 18:44:51.3 UT J.D. = 2460586.281150

Eclipse Magnitude = 0.9326 Gamma = -0.3510

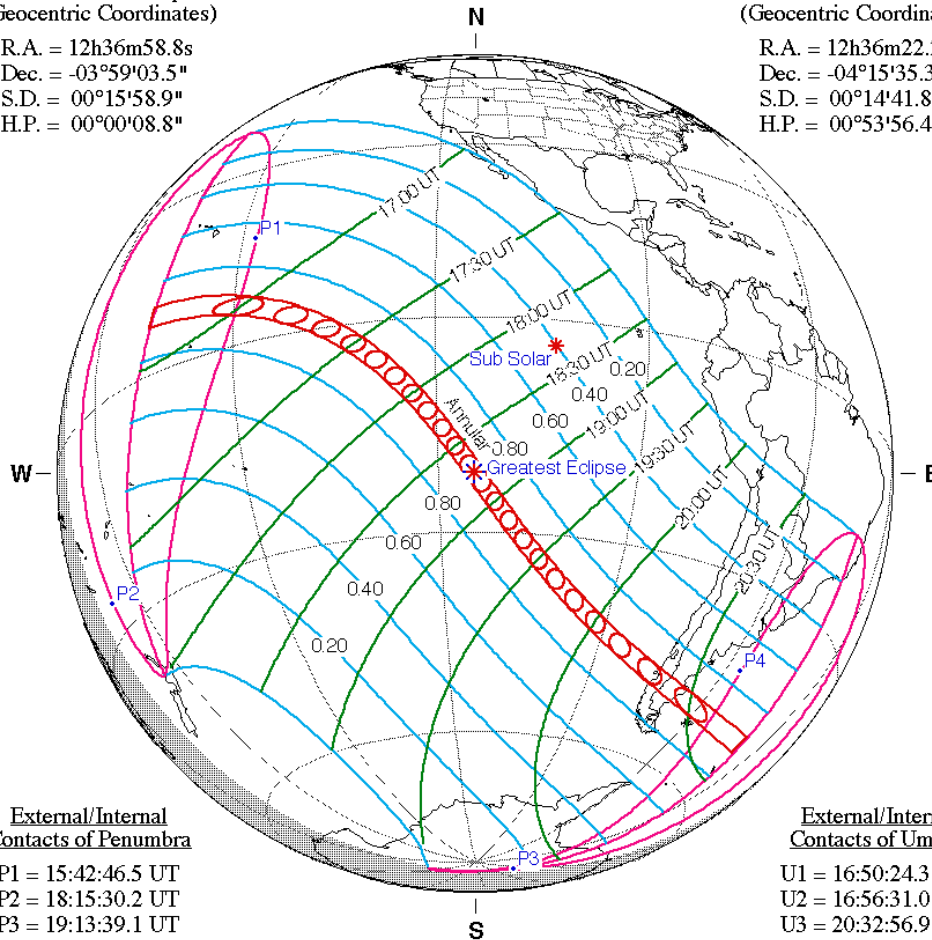
Saros Series = 144 Member = 17 of 70

Sun at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 12h36m58.8s
 Dec. = -03°59'03.5"
 S.D. = 00°15'58.9"
 H.P. = 00°00'08.8"

Moon at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 12h36m22.2s
 Dec. = -04°15'35.3"
 S.D. = 00°14'41.8"
 H.P. = 00°53'56.4"



External/Internal
Contacts of Penumbra

P1 = 15:42:46.5 UT
 P2 = 18:15:30.2 UT
 P3 = 19:13:39.1 UT
 P4 = 21:46:47.1 UT

External/Internal
Contacts of Umbra

U1 = 16:50:24.3 UT
 U2 = 16:56:31.0 UT
 U3 = 20:32:56.9 UT
 U4 = 20:39:04.5 UT

Local Circumstances at Greatest Eclipse

Lat. = 21°57.5'S Sun Alt. = 69.3°
 Long. = 114°28.2'W Sun Azm. = 31.1°
 Path Width = 266.5 km Duration = 07m25.1s

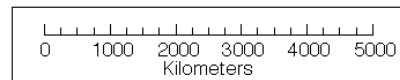
Ephemeris & Constants

Eph. = Newcomb/ILE
 $\Delta T = 81.8$ s
 $k1 = 0.2724880$
 $k2 = 0.2722810$
 $\Delta b = 0.0''$ $\Delta l = 0.0''$

Geocentric Libration
(Optical + Physical)

$l = 0.19^\circ$
 $b = 0.42^\circ$
 $c = 21.58^\circ$

Brown Lun. No. = 1259



F. Espenak, NASA's GSFC - Fri, Jul 2,
sunearth.gsfc.nasa.gov/eclipse/eclipse.html