

# Penumbral Lunar Eclipse of 2048 Dec 20

Ecliptic Conjunction = 06:40:26.7 TD (= 06:38:54.7 UT)

Greatest Eclipse = 06:27:47.9 TD (= 06:26:15.9 UT)

Penumbral Magnitude = 0.9617

P. Radius = 1.1822°

Gamma = -1.0624

Umbral Magnitude = -0.1436

U. Radius = 0.6403°

Axis = 0.9558°

Saros Series = 145 Member = 13 of 71

## Sun at Greatest Eclipse (Geocentric Coordinates)

R.A. = 17h55m49.3s

Dec. = -23°25'43.8"

S.D. = 00°16'15.4"

H.P. = 00°00'08.9"

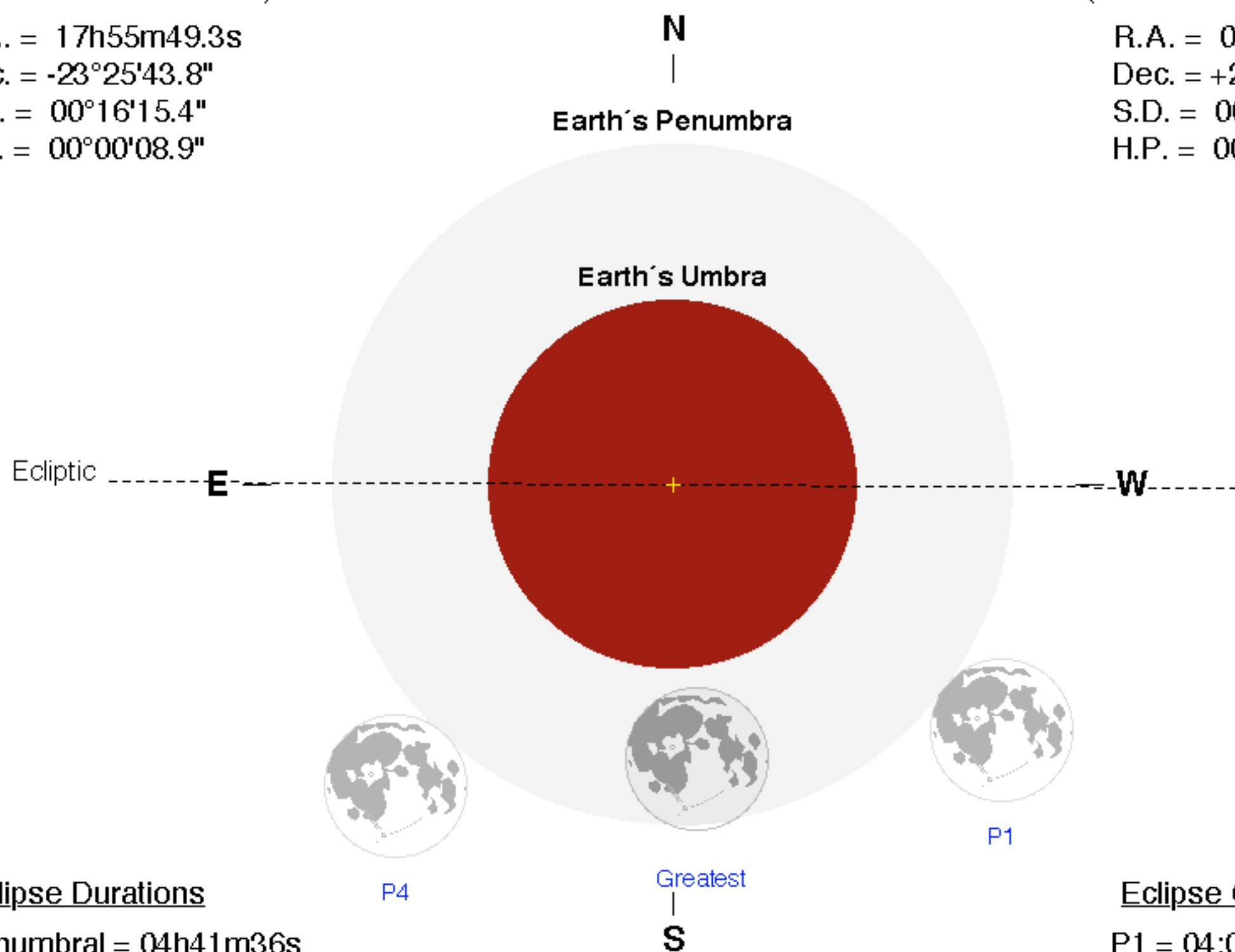
## Moon at Greatest Eclipse (Geocentric Coordinates)

R.A. = 05h55m26.5s

Dec. = +22°28'37.2"

S.D. = 00°14'42.6"

H.P. = 00°53'59.0"



## Eclipse Durations

Penumbral = 04h41m36s

## Eclipse Contacts

P1 = 04:05:28 UT

P4 = 08:47:04 UT

$\Delta T = 92$  s

Rule = CdT (Danjon)

Eph. = VSOP87/ELP2000-85

F. Espenak, NASA's GSFC  
[eclipse.gsfc.nasa.gov/eclipse.html](http://eclipse.gsfc.nasa.gov/eclipse.html)

