


Target Ephem.

301=Moon 

Observer Ephem.

399=Earth 

Source Ephem.

10=Sun 

Year

DOY or MM-DD

Hour

Minute

Second

Fetch UTC: 2017

246

Sun 09-03

11

58

50.816

Fetch TDB JD: 2458000.00000000

Fetch State

*** MachHILT v1.0 Planetary Checkout Monitor Display ***

Polling SPK Ephemeris Filename 'DE431_PLNCNT_1950-2100.bsp'

Target ID (State Vector 'Head') 301=Moon & Observer ID (State Vector 'Tail') 399=Earth

Ephemeris Fetch UTC = 2017y 246d Sun (09-03) 11:58:50.816

Ephemeris Fetch TDB JD = 2458000.00000000d

Geometric Earth Mean Equator & ICRF Equinox Of Epoch J2000.0 (J2K) State Vector (km & km/s):

+2.42976777489799E+05 -2.90265004115979E+05 -1.14838685372582E+05
 +7.56537995022226E-01 +6.24019607743226E-01 +1.73701705743962E-01

Geometric Mean Ecliptic & ICRF Equinox Of Epoch J2000.0 (J2KE) State Vector (km & km/s):

+2.42976777489799E+05 -3.11993140181314E+05 +1.00983539428688E+04
 +7.56537995022226E-01 +6.41621366975213E-01 -8.88525456429441E-02

Geometric Osculating J2KE Orbit Elements:

Eccentricity = +4.64960533606278E-02 Semi-Major Axis = +3.89495964171473E+05km
 RA of Ascending Node = +143.992263° Inclination = +05.267220°
 True Anomaly = -112.103693° Argument of Periapsis = -084.042156°

Geometric Mean Equator & FK4 Equinox Of Epoch B1950.0 (M50) State Vector (km & km/s):

+2.39155124449286E+05 -2.92960578727930E+05 -1.16010070394439E+05
 +7.64303250765267E-01 +6.15516660667518E-01 +1.70006684130282E-01

Geometric Equator & Prime Meridian Of Fetch Epoch (EPM) State Vector (km & km/s):

-3.19910621704640E+05 +2.02598001127545E+05 -1.14414399144309E+05
 -5.30721972872100E-01 -8.24405786052377E-01 +1.74962220987071E-01

Geometric Transformation from J2K to 'ITRF93' EPM:

-9.52661631578250E-01 +3.04028219072334E-01 +1.63025346877674E-03
 -3.04027843947735E-01 -9.52663025668797E-01 +4.79195225709550E-04
 +1.69877107323233E-03 -3.91315416315985E-05 +9.99998556321740E-01

301=Moon Geometric 399=Earth-Centered EPM Spherical Parameters:

Distance = +3.95574785182119E+05km Lon = +147.654098° Dec = -16.812211°
 Speed = +9.95953056794657E-01km/s Azimuth = +080.186288° FPA = -02.510578°

301=Moon Geometric 399=Earth-Centered EPM Orbit Elements:

Lon of Ascending Node = -153.227288° Inclination = +19.395206°
 Periapsis Ht = +3.65007627501559E+05km Apoapsis Ht = +4.01227769953317E+05km

ID 399=Earth Apparent Nadir Position On ID 301=Moon 'MOON_ME' EPM:

One-Way Nadir Light Time HH:MM:SS = 00:00:01.314 Nadir Range = +3.93859059602638E+05km
 Lon = -003.741566° Topodetic Lat = -01.889388° Topodetic Alt = +3.89218346211910E+05km

301=Moon to 399=Earth to 10=Sun Apparent Elongation = +146.949377° Waxing

10=Sun Apparent Illumination Latitude On 399=Earth-Centered 301=Moon Orbit Plane = -01.533270°