

# TOTAL SOLAR ECLIPSE OF 2012 NOVEMBER 13

## TABLE 2

### SHADOW CONTACTS AND CIRCUMSTANCES TOTAL SOLAR ECLIPSE OF 2012 NOVEMBER 13

$$\Delta T = 66.8 \text{ s}$$

$$= 000^{\circ}16'44.9''$$

|                       |                        | Terrestrial<br>Dynamical<br>Time<br>h m s | Latitude                    | Ephemeris<br>Longitude† | True<br>Longitude* |
|-----------------------|------------------------|---|-----------------------------|-------------------------|--------------------|
| External/Internal     |                        |   |                             |                         |                    |
| Contacts of Penumbra: | P <sub>1</sub>         | 19:39:04.9                                | 04°27.4'S                   | 149°51.7'E              | 150°08.4'E         |
|                       | P <sub>2</sub>         | 21:44:49.3                                | 41°51.6'S                   | 102°43.0'E              | 102°59.8'E         |
|                       | P <sub>3</sub>         | 22:40:51.6                                | 58°04.7'S                   | 042°08.6'W              | 041°51.9'W         |
|                       | P <sub>4</sub>         | 00:46:41.3                                | 22°08.6'S                   | 097°50.7'W              | 097°34.0'W         |
| Extreme               |                        |   |                             |                         |                    |
| North/South Limits    |                        |   |                             |                         |                    |
| of Penumbral Path:    | N <sub>1</sub>         | 20:23:14.1                                | 17°40.4'N                   | 146°19.1'E              | 146°35.8'E         |
|                       | S <sub>1</sub>         | 21:33:11.6                                | 52°19.2'S                   | 097°32.5'E              | 097°49.2'E         |
|                       | N <sub>2</sub>         | 00:02:39.1                                | 00°03.8'S                   | 094°32.4'W              | 094°15.7'W         |
|                       | S <sub>2</sub>         | 22:52:27.1                                | 66°33.7'S                   | 027°27.9'W              | 027°11.2'W         |
| External/Internal     |                        |   |                             |                         |                    |
| Contacts of Umbra:    | U <sub>1</sub>         | 20:36:15.3                                | 11°45.6'S                   | 133°06.3'E              | 133°23.1'E         |
|                       | U <sub>2</sub>         | 20:38:10.6                                | 12°08.4'S                   | 132°29.7'E              | 132°46.4'E         |
|                       | U <sub>3</sub>         | 23:47:34.6                                | 29°43.7'S                   | 079°55.6'W              | 079°38.9'W         |
|                       | U <sub>4</sub>         | 23:49:31.1                                | 29°21.1'S                   | 080°34.8'W              | 080°18.1'W         |
| Extreme               |                        |   |                             |                         |                    |
| North/South Limits    |                        |   |                             |                         |                    |
| of Umbral Path:       | N <sub>1</sub>         | 20:36:45.3                                | 11°26.7'S                   | 133°05.4'E              | 133°22.1'E         |
|                       | S <sub>1</sub>         | 20:37:41.2                                | 12°27.2'S                   | 132°30.5'E              | 132°47.2'E         |
|                       | N <sub>2</sub>         | 23:49:00.9                                | 29°02.2'S                   | 080°35.6'W              | 080°18.8'W         |
|                       | S <sub>2</sub>         | 23:48:04.2                                | 30°02.4'S                   | 079°54.7'W              | 079°37.9'W         |
| Extreme Limits        |                        |   |                             |                         |                    |
| of Central Line:      | C <sub>1</sub>         | 20:37:12.9                                | 11°56.9'S                   | 132°48.1'E              | 133°04.8'E         |
|                       | C <sub>2</sub>         | 23:48:32.9                                | 29°32.3'S                   | 080°15.3'W              | 079°58.5'W         |
| Instant of            |                        |   |                             |                         |                    |
| Greatest Eclipse:     | G <sub>0</sub>         | 22:12:55.2                                | 39°57.4'S                   | 161°37.0'W              | 161°20.2'W         |
| Circumstances at      |                        |   |                             |                         |                    |
| Greatest Eclipse:     | Sun's Altitude = 68.0° |   | Path Width = 179.0 km       |                         |                    |
|                       | Sun's Azimuth = 11.4°  |   | Central Duration = 04m02.2s |                         |                    |

† Ephemeris Longitude is the terrestrial dynamical longitude assuming a uniformly rotating Earth.

\* True Longitude is calculated by correcting the Ephemeris Longitude for the non-uniform rotation of Earth.

$$(T.L. = E.L. + 1.002738 * \Delta T / 240, \text{ where } \Delta T \text{ (in seconds)} = TDT - UT)$$

Note: Longitude is measured positive to the East.

Because  $\Delta T$  is not known in advance, the value used in the predictions is an extrapolation based on mid-2012 measurements. The actual value is expected to fall within  $\pm 0.15$  seconds of the estimated  $\Delta T$  used here.