

TABLE 2

SHADOW CONTACTS AND CIRCUMSTANCES
TOTAL SOLAR ECLIPSE OF 2009 JULY 22

$$\Delta T = 65.9 \text{ s}$$

$$= 000^{\circ}16'30.7''$$

		Terrestrial Dynamical Time h m s	Latitude	Ephemeris Longitude†	True Longitude*
External/Internal					
Contacts of Penumbra:	P ₁	23:59:21.9	19°03.1'N	084°26.4'E	084°42.9'E
	P ₂	01:48:45.4	24°36.7'N	054°40.9'E	054°57.4'E
	P ₃	03:24:06.3	08°37.4'S	142°37.4'W	142°20.9'W
	P ₄	05:13:28.5	14°13.7'S	172°07.6'W	171°51.0'W
Extreme					
North/South Limits of Penumbral Path:	N ₁	01:20:20.5	49°49.6'N	045°34.6'E	045°51.1'E
	S ₁	00:56:45.0	08°51.2'S	080°43.6'E	081°00.1'E
	N ₂	03:52:42.2	17°50.9'N	139°44.4'W	139°27.9'W
	S ₂	04:15:50.7	41°31.6'S	171°25.4'W	171°08.9'W
External/Internal					
Contacts of Umbra:	U ₁	00:52:20.2	20°18.2'N	070°40.3'E	070°56.8'E
	U ₂	00:55:34.3	20°25.3'N	069°48.8'E	070°05.3'E
	U ₃	04:17:16.4	12°51.1'S	157°32.2'W	157°15.7'W
	U ₄	04:20:29.7	12°58.2'S	158°23.3'W	158°06.8'W
Extreme					
North/South Limits of Umbral Path:	N ₁	00:54:19.7	21°11.6'N	069°47.7'E	070°04.2'E
	S ₁	00:53:36.5	19°31.7'N	070°40.8'E	070°57.4'E
	N ₂	04:18:31.0	12°04.6'S	157°32.8'W	157°16.3'W
	S ₂	04:19:13.4	13°44.8'S	158°22.5'W	158°05.9'W
Extreme Limits of Central Line:					
	C ₁	00:53:57.2	20°21.7'N	070°14.6'E	070°31.1'E
	C ₂	04:18:53.1	12°54.7'S	157°57.8'W	157°41.3'W
Instant of Greatest Eclipse:	G ₀	02:36:24.4	24°13.2'N	143°50.5'E	144°07.0'E
Circumstances at Greatest Eclipse:					
	Sun's Altitude = 85.9°		Path Width = 258.4 km		
	Sun's Azimuth = 197.6°		Central Duration = 06m38.8s		

† 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.

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

Note: Longitude is measured positive to the East.

Because ΔT is not known in advance, the value used in the predictions is an extrapolation based on pre-2008 measurements. The actual value is expected to fall within ± 0.3 seconds of the estimated ΔT used here.