

TABLE 2.2

SHADOW CONTACTS AND CIRCUMSTANCES  
ANNULAR SOLAR ECLIPSE OF 2010 JANUARY 15

$\Delta T = 66.0$  s  
=000°16'33.3"

		Terrestrial Dynamical Time h m s	Latitude	Ephemeris Longitude†	True Longitude*
External/Internal					
Contacts of Penumbra:	P <sub>1</sub>	04:06:33.5	01°19.3'S	030°10.3'E	030°26.8'E
	P <sub>2</sub>	06:51:12.8	49°46.0'N	016°42.4'E	016°58.9'E
	P <sub>3</sub>	07:23:43.6	68°44.1'N	078°14.4'E	078°31.0'E
	P <sub>4</sub>	10:08:41.1	28°48.1'N	107°54.8'E	108°11.4'E
Extreme					
North/South Limits					
of Penumbral Path:	N <sub>1</sub>	06:38:30.2	55°02.1'N	026°15.4'E	026°31.9'E
	S <sub>1</sub>	05:22:22.9	23°58.0'S	001°49.9'E	002°06.4'E
	N <sub>2</sub>	07:36:14.0	68°32.5'N	057°41.0'E	057°57.6'E
	S <sub>2</sub>	08:53:00.5	06°14.6'N	136°39.6'E	136°56.2'E
External/Internal					
Contacts of Umbra:	U <sub>1</sub>	05:15:00.9	06°20.1'N	016°01.9'E	016°18.4'E
	U <sub>2</sub>	05:22:21.8	07°39.7'N	014°43.0'E	014°59.5'E
	U <sub>3</sub>	08:52:46.3	37°29.1'N	121°54.8'E	122°11.4'E
	U <sub>4</sub>	09:00:09.7	36°12.5'N	120°52.3'E	121°08.8'E
Extreme					
North/South Limits					
of Umbral Path:	N <sub>1</sub>	05:19:34.2	08°37.1'N	015°47.6'E	016°04.1'E
	S <sub>1</sub>	05:17:54.1	05°21.4'N	014°55.6'E	015°12.2'E
	N <sub>2</sub>	08:55:34.1	38°24.0'N	120°37.1'E	120°53.7'E
	S <sub>2</sub>	08:57:16.1	35°16.0'N	122°10.1'E	122°26.7'E
Extreme Limits					
of Central Line:	C <sub>1</sub>	05:18:40.7	06°58.7'N	015°22.1'E	015°38.6'E
	C <sub>2</sub>	08:56:28.6	36°49.6'N	121°24.3'E	121°40.9'E
Instant of					
Greatest Eclipse:	G <sub>0</sub>	07:07:39.0	01°37.4'N	069°00.9'E	069°17.4'E
Circumstances at					
Greatest Eclipse:	Sun's Altitude = 66.4°		Path Width = 333.1 km		
	Sun's Azimuth = 164.9°		Central Duration = 11m07.8s		

† 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, where  $\Delta T$ (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 pre-2009 measurements. The actual value is expected to fall within  $\pm 0.3$  seconds of the estimated  $\Delta T$  used here.