

TABLE 3.4

PHYSICAL EPHEMERIS OF THE UMBRAL SHADOW
TOTAL SOLAR ECLIPSE OF 2010 JULY 11

$\Delta T = 66.2 \text{ s}$

Universal Time	Central Line		Diameter Ratio	Eclipse Obscur.	Sun Alt °	Sun Azm °	Path Width km	Major Axis km	Minor Axis km	Umbra Veloc. km/s	Central Durat.
	Latitude	Longitude									
18:16.8	26°51.4'S	170°59.5'W	1.0441	1.0902	0.0	65.1	179.2	-	147.2	-	02m42.4s
18:20	22°19.8'S	159°27.6'W	1.0480	1.0982	12.0	59.8	197.0	761.8	159.4	3.160	03m15.1s
18:25	20°10.7'S	153°03.5'W	1.0502	1.1029	19.2	56.5	209.5	504.6	166.5	1.842	03m37.8s
18:30	18°57.0'S	148°42.5'W	1.0517	1.1062	24.2	53.9	219.2	416.3	171.4	1.385	03m55.0s
18:35	18°09.2'S	145°15.0'W	1.0529	1.1087	28.3	51.3	227.5	368.9	175.1	1.138	04m09.5s
18:40	17°37.6'S	142°19.0'W	1.0539	1.1107	31.7	48.8	234.8	338.7	178.1	0.980	04m22.1s
18:45	17°17.7'S	139°44.0'W	1.0547	1.1124	34.6	46.2	241.3	317.8	180.7	0.871	04m33.3s
18:50	17°07.1'S	137°24.2'W	1.0554	1.1139	37.1	43.5	247.0	302.5	182.9	0.791	04m43.1s
18:55	17°04.1'S	135°15.7'W	1.0560	1.1151	39.3	40.6	251.8	291.0	184.7	0.732	04m51.7s
19:00	17°07.7'S	133°15.9'W	1.0565	1.1162	41.2	37.6	255.7	282.1	186.2	0.687	04m59.1s
19:05	17°17.2'S	131°23.1'W	1.0569	1.1171	42.9	34.4	258.6	275.3	187.6	0.654	05m05.4s
19:10	17°31.9'S	129°35.6'W	1.0573	1.1178	44.2	31.0	260.7	270.0	188.6	0.629	05m10.5s
19:15	17°51.7'S	127°52.5'W	1.0575	1.1184	45.3	27.5	261.8	266.1	189.5	0.612	05m14.6s
19:20	18°16.1'S	126°12.6'W	1.0578	1.1188	46.2	23.9	262.0	263.2	190.2	0.602	05m17.5s
19:25	18°45.1'S	124°35.1'W	1.0579	1.1192	46.7	20.1	261.4	261.4	190.7	0.597	05m19.4s
19:30	19°18.6'S	122°59.4'W	1.0580	1.1194	47.1	16.3	260.0	260.5	191.0	0.597	05m20.3s
19:35	19°56.5'S	121°24.5'W	1.0580	1.1195	47.1	12.4	257.9	260.4	191.1	0.603	05m20.0s
19:40	20°38.9'S	119°49.9'W	1.0580	1.1194	46.9	8.4	255.3	261.3	191.0	0.613	05m18.8s
19:45	21°25.9'S	118°14.8'W	1.0579	1.1193	46.4	4.6	252.3	263.0	190.8	0.628	05m16.5s
19:50	22°17.7'S	116°38.5'W	1.0578	1.1190	45.7	0.7	248.8	265.6	190.3	0.649	05m13.3s
19:55	23°14.5'S	115°00.0'W	1.0576	1.1185	44.7	356.9	245.0	269.4	189.7	0.675	05m09.1s
20:00	24°16.8'S	113°18.4'W	1.0573	1.1180	43.4	353.2	241.1	274.4	188.9	0.707	05m03.9s
20:05	25°25.0'S	111°32.6'W	1.0570	1.1173	41.9	349.6	236.9	280.8	187.9	0.748	04m57.8s
20:10	26°39.9'S	109°41.0'W	1.0566	1.1164	40.1	346.1	232.7	289.2	186.6	0.798	04m50.7s
20:15	28°02.3'S	107°41.8'W	1.0561	1.1153	38.0	342.7	228.3	300.0	185.0	0.860	04m42.7s
20:20	29°33.7'S	105°32.3'W	1.0555	1.1141	35.5	339.3	223.8	314.1	183.2	0.939	04m33.7s
20:25	31°16.0'S	103°09.0'W	1.0548	1.1126	32.8	335.9	219.1	333.1	180.9	1.043	04m23.6s
20:30	33°12.2'S	100°26.0'W	1.0539	1.1108	29.6	332.5	214.3	359.8	178.2	1.186	04m12.3s
20:35	35°27.5'S	097°13.7'W	1.0529	1.1086	25.8	328.9	209.2	400.1	175.0	1.397	03m59.4s
20:40	38°11.7'S	093°12.9'W	1.0516	1.1058	21.2	324.8	203.6	469.3	170.8	1.754	03m44.4s
20:45	41°50.5'S	087°33.0'W	1.0497	1.1019	15.1	319.7	196.9	628.5	165.0	2.561	03m25.7s
20:50	50°24.0'S	071°53.8'W	1.0452	1.0925	0.8	307.2	183.5	9822.8	150.7	48.256	02m47.2s
20:50.0	50°51.4'S	070°55.8'W	1.0450	1.0920	0.0	306.5	182.8	-	149.9	-	02m45.4s