

# ANNULAR SOLAR ECLIPSE OF 2010 JANUARY 15

## TABLE 2.D – MAPPING COORDINATES FOR THE ZONES OF GRAZING ECLIPSE (EXTENDED)

| $\Delta T = 66.0 \text{ s}$ |                   |                   |                            |                   |                   |                            |                  |              |                        |
|-----------------------------|-------------------|-------------------|----------------------------|-------------------|-------------------|----------------------------|------------------|--------------|------------------------|
| Longitude                   | North Graze Zone  |                   | Northern                   | South Graze Zone  |                   | Southern                   | Path<br>Azm<br>° | Elev<br>Fact | Scale<br>Fact<br>km/'' |
|                             | Latitudes         |                   | Limit                      | Latitudes         |                   | Limit                      |                  |              |                        |
|                             | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s |                  |              |                        |
| 016°22.5'E                  | 08°31.58'N        | 08°28.14'N        | 05:17:47                   | 04°54.52'N        | 04°54.52'N        | 05:16:50                   | 111.2            | -0.19        | 2.00                   |
| 016°30.0'E                  | 08°29.03'N        | 08°24.76'N        | 05:18:02                   | 04°51.67'N        | 04°51.67'N        | 05:16:50                   | 111.2            | -0.18        | 2.00                   |
| 016°37.5'E                  | 08°26.37'N        | 08°21.49'N        | 05:18:12                   | 04°48.81'N        | 04°48.81'N        | 05:16:51                   | 111.2            | -0.18        | 1.99                   |
| 016°45.0'E                  | 08°23.62'N        | 08°18.33'N        | 05:18:19                   | 04°45.96'N        | 04°45.96'N        | 05:16:51                   | 111.2            | -0.17        | 1.99                   |
| 016°52.5'E                  | 08°20.80'N        | 08°15.23'N        | 05:18:24                   | 04°43.10'N        | 04°43.10'N        | 05:16:52                   | 111.2            | -0.17        | 1.99                   |
| 017°00.0'E                  | 08°17.93'N        | 08°12.19'N        | 05:18:28                   | 04°40.26'N        | 04°40.26'N        | 05:16:52                   | 111.2            | -0.16        | 1.99                   |
| 017°07.5'E                  | 08°15.02'N        | 08°09.20'N        | 05:18:30                   | 04°37.41'N        | 04°37.41'N        | 05:16:53                   | 111.2            | -0.16        | 1.99                   |
| 017°15.0'E                  | 08°12.10'N        | 08°06.23'N        | 05:18:31                   | 04°34.57'N        | 04°34.57'N        | 05:16:54                   | 111.2            | -0.16        | 1.99                   |
| 017°22.5'E                  | 08°09.15'N        | 08°03.28'N        | 05:18:31                   | 04°31.72'N        | 04°31.72'N        | 05:16:54                   | 111.2            | -0.16        | 1.99                   |
| 017°30.0'E                  | 08°06.21'N        | 08°00.34'N        | 05:18:32                   | 04°28.89'N        | 04°28.89'N        | 05:16:55                   | 111.2            | -0.16        | 1.99                   |
| 017°37.5'E                  | 08°03.26'N        | 07°57.41'N        | 05:18:32                   | 04°26.05'N        | 04°26.05'N        | 05:16:56                   | 111.2            | -0.16        | 1.99                   |
| 017°45.0'E                  | 08°00.31'N        | 07°54.48'N        | 05:18:32                   | 04°23.22'N        | 04°23.22'N        | 05:16:57                   | 111.2            | -0.16        | 1.99                   |
| 017°52.5'E                  | 07°57.37'N        | 07°51.55'N        | 05:18:33                   | 04°20.38'N        | 04°20.38'N        | 05:16:58                   | 111.2            | -0.15        | 1.99                   |
| 018°00.0'E                  | 07°54.44'N        | 07°48.62'N        | 05:18:33                   | 04°17.56'N        | 04°17.56'N        | 05:16:58                   | 111.2            | -0.15        | 1.99                   |
| 018°07.5'E                  | 07°51.50'N        | 07°45.69'N        | 05:18:34                   | 04°14.73'N        | 04°14.73'N        | 05:16:59                   | 111.2            | -0.15        | 1.99                   |
| 018°15.0'E                  | 07°48.58'N        | 07°42.76'N        | 05:18:35                   | 04°11.91'N        | 04°11.91'N        | 05:17:00                   | 111.2            | -0.15        | 1.99                   |
| 018°22.5'E                  | 07°45.65'N        | 07°39.84'N        | 05:18:36                   | 04°09.09'N        | 04°09.09'N        | 05:17:02                   | 111.1            | -0.16        | 1.99                   |
| 018°30.0'E                  | 07°42.73'N        | 07°36.92'N        | 05:18:37                   | 04°06.27'N        | 04°06.27'N        | 05:17:03                   | 111.1            | -0.18        | 1.99                   |
| 018°37.5'E                  | 07°39.81'N        | 07°34.00'N        | 05:18:37                   | 04°03.45'N        | 04°03.45'N        | 05:17:04                   | 111.1            | -0.18        | 2.00                   |
| 018°45.0'E                  | 07°36.89'N        | 07°31.08'N        | 05:18:38                   | 04°00.64'N        | 04°00.64'N        | 05:17:05                   | 111.0            | -0.19        | 2.00                   |
| 018°52.5'E                  | 07°33.97'N        | 07°28.17'N        | 05:18:39                   | 03°57.83'N        | 03°57.83'N        | 05:17:06                   | 111.0            | -0.19        | 2.00                   |
| 019°00.0'E                  | 07°31.06'N        | 07°25.26'N        | 05:18:40                   | 03°55.03'N        | 03°55.03'N        | 05:17:08                   | 111.0            | -0.19        | 2.00                   |
| 019°07.5'E                  | 07°28.15'N        | 07°22.35'N        | 05:18:41                   | 03°52.22'N        | 03°52.22'N        | 05:17:09                   | 111.0            | -0.20        | 2.00                   |
| 019°15.0'E                  | 07°25.24'N        | 07°19.44'N        | 05:18:43                   | 03°49.42'N        | 03°49.42'N        | 05:17:10                   | 110.9            | -0.20        | 2.00                   |
| 019°22.5'E                  | 07°22.33'N        | 07°16.54'N        | 05:18:44                   | 03°46.63'N        | 03°46.63'N        | 05:17:12                   | 110.9            | -0.20        | 2.00                   |
| 019°30.0'E                  | 07°19.43'N        | 07°13.64'N        | 05:18:45                   | 03°43.83'N        | 03°43.83'N        | 05:17:13                   | 110.9            | -0.20        | 2.00                   |
| 019°37.5'E                  | 07°16.53'N        | 07°10.74'N        | 05:18:46                   | 03°41.04'N        | 03°41.04'N        | 05:17:15                   | 110.9            | -0.21        | 2.01                   |
| 019°45.0'E                  | 07°13.64'N        | 07°07.85'N        | 05:18:48                   | 03°38.25'N        | 03°38.25'N        | 05:17:16                   | 110.8            | -0.21        | 2.01                   |
| 019°52.5'E                  | 07°10.74'N        | 07°04.96'N        | 05:18:49                   | 03°35.47'N        | 03°35.47'N        | 05:17:18                   | 110.8            | -0.21        | 2.01                   |
| 020°00.0'E                  | 07°07.85'N        | 07°02.07'N        | 05:18:50                   | 03°32.68'N        | 03°32.68'N        | 05:17:20                   | 110.8            | -0.21        | 2.01                   |
| 020°07.5'E                  | 07°04.96'N        | 06°59.19'N        | 05:18:52                   | 03°29.91'N        | 03°29.91'N        | 05:17:21                   | 110.8            | -0.21        | 2.01                   |
| 020°15.0'E                  | 07°02.08'N        | 06°56.31'N        | 05:18:53                   | 03°27.13'N        | 03°27.13'N        | 05:17:23                   | 110.7            | -0.21        | 2.01                   |
| 020°22.5'E                  | 06°59.19'N        | 06°53.43'N        | 05:18:55                   | 03°24.36'N        | 03°24.36'N        | 05:17:25                   | 110.7            | -0.21        | 2.01                   |
| 020°30.0'E                  | 06°56.32'N        | 06°50.55'N        | 05:18:56                   | 03°21.59'N        | 03°21.59'N        | 05:17:27                   | 110.7            | -0.21        | 2.01                   |
| 020°37.5'E                  | 06°53.44'N        | 06°47.68'N        | 05:18:58                   | 03°18.82'N        | 03°18.82'N        | 05:17:29                   | 110.7            | -0.22        | 2.01                   |
| 020°45.0'E                  | 06°50.57'N        | 06°44.81'N        | 05:19:00                   | 03°16.06'N        | 03°16.06'N        | 05:17:31                   | 110.7            | -0.22        | 2.01                   |
| 020°52.5'E                  | 06°47.70'N        | 06°41.95'N        | 05:19:02                   | 03°13.30'N        | 03°13.30'N        | 05:17:33                   | 110.6            | -0.22        | 2.01                   |
| 021°00.0'E                  | 06°44.83'N        | 06°39.08'N        | 05:19:03                   | 03°10.54'N        | 03°10.54'N        | 05:17:35                   | 110.6            | -0.22        | 2.01                   |
| 021°07.5'E                  | 06°41.96'N        | 06°36.22'N        | 05:19:05                   | 03°08.59'N        | 03°08.59'N        | 05:17:37                   | 110.6            | -0.22        | 2.01                   |
| 021°15.0'E                  | 06°39.10'N        | 06°33.37'N        | 05:19:07                   | 03°05.84'N        | 03°05.84'N        | 05:17:39                   | 110.6            | -0.22        | 2.01                   |
| 021°22.5'E                  | 06°36.25'N        | 06°30.52'N        | 05:19:09                   | 03°03.09'N        | 02°58.20'N        | 05:17:41                   | 110.5            | -0.22        | 2.01                   |
| 021°30.0'E                  | 06°33.39'N        | 06°27.67'N        | 05:19:11                   | 03°00.34'N        | 02°55.47'N        | 05:17:43                   | 110.5            | -0.22        | 2.01                   |
| 021°37.5'E                  | 06°30.54'N        | 06°24.82'N        | 05:19:13                   | 02°57.60'N        | 02°52.74'N        | 05:17:46                   | 110.5            | -0.22        | 2.01                   |
| 021°45.0'E                  | 06°27.70'N        | 06°21.98'N        | 05:19:15                   | 02°54.87'N        | 02°50.01'N        | 05:17:48                   | 110.5            | -0.22        | 2.01                   |
| 021°52.5'E                  | 06°24.86'N        | 06°19.14'N        | 05:19:17                   | 02°52.14'N        | 02°47.29'N        | 05:17:50                   | 110.4            | -0.22        | 2.01                   |
| 022°00.0'E                  | 06°22.02'N        | 06°16.31'N        | 05:19:20                   | 02°49.41'N        | 02°44.57'N        | 05:17:53                   | 110.4            | -0.22        | 2.01                   |

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## TABLE 2.D – MAPPING COORDINATES FOR THE ZONES OF GRAZING ECLIPSE (EXTENDED)

| $\Delta T = 66.0 \text{ s}$ |                   |                   |                            |                   |                   |                            |                  |              |                        |
|-----------------------------|-------------------|-------------------|----------------------------|-------------------|-------------------|----------------------------|------------------|--------------|------------------------|
| Longitude                   | North Graze Zone  |                   | Northern                   | South Graze Zone  |                   | Southern                   | Path<br>Azm<br>° | Elev<br>Fact | Scale<br>Fact<br>km/'' |
|                             | Latitudes         |                   | Limit                      | Latitudes         |                   | Limit                      |                  |              |                        |
|                             | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s |                  |              |                        |
| 022°07.5'E                  | 06°19.19'N        | 06°13.48'N        | 05:19:22                   | 02°46.68'N        | 02°41.85'N        | 05:17:55                   | 110.4            | -0.23        | 2.01                   |
| 022°15.0'E                  | 06°16.37'N        | 06°10.65'N        | 05:19:24                   | 02°43.97'N        | 02°38.80'N        | 05:17:58                   | 110.4            | -0.23        | 2.01                   |
| 022°22.5'E                  | 06°13.54'N        | 06°07.82'N        | 05:19:27                   | 02°41.25'N        | 02°36.12'N        | 05:18:00                   | 110.3            | -0.23        | 2.01                   |
| 022°30.0'E                  | 06°10.73'N        | 06°05.00'N        | 05:19:29                   | 02°38.55'N        | 02°33.42'N        | 05:18:03                   | 110.3            | -0.23        | 2.01                   |
| 022°37.5'E                  | 06°07.91'N        | 06°02.19'N        | 05:19:31                   | 02°35.84'N        | 02°30.72'N        | 05:18:06                   | 110.3            | -0.23        | 2.02                   |
| 022°45.0'E                  | 06°05.10'N        | 05°59.37'N        | 05:19:34                   | 02°33.14'N        | 02°28.02'N        | 05:18:08                   | 110.2            | -0.23        | 2.02                   |
| 022°52.5'E                  | 06°02.29'N        | 05°56.56'N        | 05:19:36                   | 02°30.44'N        | 02°25.33'N        | 05:18:11                   | 110.2            | -0.23        | 2.02                   |
| 023°00.0'E                  | 05°59.49'N        | 05°53.76'N        | 05:19:39                   | 02°27.74'N        | 02°22.65'N        | 05:18:14                   | 110.2            | -0.23        | 2.02                   |
| 023°07.5'E                  | 05°56.69'N        | 05°50.96'N        | 05:19:42                   | 02°25.05'N        | 02°19.96'N        | 05:18:17                   | 110.2            | -0.23        | 2.02                   |
| 023°15.0'E                  | 05°53.90'N        | 05°48.16'N        | 05:19:45                   | 02°22.36'N        | 02°17.28'N        | 05:18:20                   | 110.1            | -0.23        | 2.02                   |
| 023°22.5'E                  | 05°51.11'N        | 05°45.37'N        | 05:19:47                   | 02°19.68'N        | 02°14.61'N        | 05:18:23                   | 110.1            | -0.23        | 2.02                   |
| 023°30.0'E                  | 05°48.32'N        | 05°42.58'N        | 05:19:50                   | 02°17.00'N        | 02°11.94'N        | 05:18:26                   | 110.1            | -0.23        | 2.02                   |
| 023°37.5'E                  | 05°45.54'N        | 05°39.79'N        | 05:19:53                   | 02°14.33'N        | 02°09.27'N        | 05:18:29                   | 110.1            | -0.23        | 2.02                   |
| 023°45.0'E                  | 05°42.76'N        | 05°37.01'N        | 05:19:56                   | 02°11.66'N        | 02°06.61'N        | 05:18:32                   | 110.0            | -0.23        | 2.02                   |
| 023°52.5'E                  | 05°39.98'N        | 05°34.24'N        | 05:19:59                   | 02°08.99'N        | 02°03.83'N        | 05:18:35                   | 110.0            | -0.23        | 2.02                   |
| 024°00.0'E                  | 05°37.21'N        | 05°31.47'N        | 05:20:02                   | 02°06.32'N        | 02°01.16'N        | 05:18:39                   | 110.0            | -0.23        | 2.02                   |
| 024°07.5'E                  | 05°34.45'N        | 05°28.70'N        | 05:20:05                   | 02°03.67'N        | 01°58.51'N        | 05:18:42                   | 109.9            | -0.24        | 2.02                   |
| 024°15.0'E                  | 05°31.68'N        | 05°25.93'N        | 05:20:08                   | 02°01.01'N        | 01°55.87'N        | 05:18:45                   | 109.9            | -0.24        | 2.02                   |
| 024°22.5'E                  | 05°28.93'N        | 05°23.17'N        | 05:20:11                   | 01°58.36'N        | 01°53.23'N        | 05:18:49                   | 109.9            | -0.24        | 2.02                   |
| 024°30.0'E                  | 05°26.17'N        | 05°20.42'N        | 05:20:15                   | 01°55.72'N        | 01°50.59'N        | 05:18:52                   | 109.8            | -0.24        | 2.02                   |
| 024°37.5'E                  | 05°23.42'N        | 05°17.67'N        | 05:20:18                   | 01°53.07'N        | 01°47.96'N        | 05:18:56                   | 109.8            | -0.24        | 2.02                   |
| 024°45.0'E                  | 05°20.68'N        | 05°14.92'N        | 05:20:21                   | 01°50.44'N        | 01°45.33'N        | 05:18:59                   | 109.8            | -0.24        | 2.02                   |
| 024°52.5'E                  | 05°17.94'N        | 05°12.18'N        | 05:20:25                   | 01°47.80'N        | 01°42.71'N        | 05:19:03                   | 109.8            | -0.24        | 2.02                   |
| 025°00.0'E                  | 05°15.20'N        | 05°09.44'N        | 05:20:28                   | 01°45.17'N        | 01°40.09'N        | 05:19:07                   | 109.7            | -0.24        | 2.02                   |
| 025°07.5'E                  | 05°12.47'N        | 05°06.71'N        | 05:20:32                   | 01°42.55'N        | 01°37.47'N        | 05:19:10                   | 109.7            | -0.24        | 2.02                   |
| 025°15.0'E                  | 05°09.74'N        | 05°03.98'N        | 05:20:35                   | 01°39.93'N        | 01°34.86'N        | 05:19:14                   | 109.7            | -0.24        | 2.02                   |
| 025°22.5'E                  | 05°07.02'N        | 05°01.25'N        | 05:20:39                   | 01°37.32'N        | 01°32.21'N        | 05:19:18                   | 109.6            | -0.24        | 2.02                   |
| 025°30.0'E                  | 05°04.30'N        | 04°58.53'N        | 05:20:43                   | 01°34.71'N        | 01°29.60'N        | 05:19:22                   | 109.6            | -0.24        | 2.02                   |
| 025°37.5'E                  | 05°01.59'N        | 04°55.82'N        | 05:20:47                   | 01°32.10'N        | 01°27.01'N        | 05:19:26                   | 109.6            | -0.24        | 2.02                   |
| 025°45.0'E                  | 04°58.88'N        | 04°53.11'N        | 05:20:50                   | 01°29.50'N        | 01°24.42'N        | 05:19:30                   | 109.5            | -0.24        | 2.02                   |
| 025°52.5'E                  | 04°56.18'N        | 04°50.41'N        | 05:20:54                   | 01°26.90'N        | 01°21.83'N        | 05:19:34                   | 109.5            | -0.24        | 2.02                   |
| 026°00.0'E                  | 04°53.48'N        | 04°47.71'N        | 05:20:58                   | 01°24.32'N        | 01°19.25'N        | 05:19:38                   | 109.5            | -0.24        | 2.02                   |
| 026°07.5'E                  | 04°50.79'N        | 04°45.01'N        | 05:21:02                   | 01°21.74'N        | 01°16.68'N        | 05:19:42                   | 109.4            | -0.24        | 2.02                   |
| 026°15.0'E                  | 04°48.10'N        | 04°42.32'N        | 05:21:06                   | 01°19.16'N        | 01°14.10'N        | 05:19:47                   | 109.4            | -0.24        | 2.02                   |
| 026°22.5'E                  | 04°45.42'N        | 04°39.64'N        | 05:21:10                   | 01°16.58'N        | 01°11.54'N        | 05:19:51                   | 109.4            | -0.25        | 2.02                   |
| 026°30.0'E                  | 04°42.74'N        | 04°36.96'N        | 05:21:15                   | 01°14.02'N        | 01°08.98'N        | 05:19:55                   | 109.3            | -0.25        | 2.02                   |
| 026°37.5'E                  | 04°40.06'N        | 04°34.28'N        | 05:21:19                   | 01°11.45'N        | 01°06.42'N        | 05:20:00                   | 109.3            | -0.25        | 2.02                   |
| 026°45.0'E                  | 04°37.40'N        | 04°31.61'N        | 05:21:23                   | 01°08.90'N        | 01°03.86'N        | 05:20:04                   | 109.3            | -0.25        | 2.02                   |
| 026°52.5'E                  | 04°34.73'N        | 04°28.95'N        | 05:21:28                   | 01°06.34'N        | 01°01.28'N        | 05:20:09                   | 109.2            | -0.25        | 2.02                   |
| 027°00.0'E                  | 04°32.07'N        | 04°26.29'N        | 05:21:32                   | 01°03.80'N        | 00°58.73'N        | 05:20:13                   | 109.2            | -0.25        | 2.02                   |
| 027°07.5'E                  | 04°29.42'N        | 04°23.64'N        | 05:21:36                   | 01°01.25'N        | 00°56.20'N        | 05:20:18                   | 109.1            | -0.25        | 2.02                   |
| 027°15.0'E                  | 04°26.77'N        | 04°20.99'N        | 05:21:41                   | 00°58.72'N        | 00°53.67'N        | 05:20:22                   | 109.1            | -0.25        | 2.02                   |
| 027°22.5'E                  | 04°24.13'N        | 04°18.34'N        | 05:21:46                   | 00°56.19'N        | 00°51.14'N        | 05:20:27                   | 109.1            | -0.25        | 2.02                   |
| 027°30.0'E                  | 04°21.49'N        | 04°15.71'N        | 05:21:50                   | 00°53.66'N        | 00°48.63'N        | 05:20:32                   | 109.0            | -0.25        | 2.03                   |
| 027°37.5'E                  | 04°18.86'N        | 04°13.07'N        | 05:21:55                   | 00°51.14'N        | 00°46.11'N        | 05:20:37                   | 109.0            | -0.25        | 2.03                   |
| 027°45.0'E                  | 04°16.24'N        | 04°10.45'N        | 05:22:00                   | 00°48.62'N        | 00°43.60'N        | 05:20:42                   | 109.0            | -0.25        | 2.03                   |
| 027°52.5'E                  | 04°13.62'N        | 04°07.83'N        | 05:22:04                   | 00°46.11'N        | 00°41.10'N        | 05:20:47                   | 108.9            | -0.25        | 2.03                   |
| 028°00.0'E                  | 04°11.00'N        | 04°05.21'N        | 05:22:09                   | 00°43.61'N        | 00°38.61'N        | 05:20:52                   | 108.9            | -0.25        | 2.03                   |

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## TABLE 2.D – MAPPING COORDINATES FOR THE ZONES OF GRAZING ECLIPSE (EXTENDED)

| $\Delta T = 66.0 \text{ s}$ |                   |                   |                            |                   |                   |                            |                  |              |                        |
|-----------------------------|-------------------|-------------------|----------------------------|-------------------|-------------------|----------------------------|------------------|--------------|------------------------|
| Longitude                   | North Graze Zone  |                   | Northern                   | South Graze Zone  |                   | Southern                   | Path<br>Azm<br>° | Elev<br>Fact | Scale<br>Fact<br>km/'' |
|                             | Latitudes         |                   | Limit                      | Latitudes         |                   | Limit                      |                  |              |                        |
|                             | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s |                  |              |                        |
| 028°07.5'E                  | 04°08.39'N        | 04°02.60'N        | 05:22:14                   | 00°41.11'N        | 00°36.11'N        | 05:20:57                   | 108.8            | -0.25        | 2.03                   |
| 028°15.0'E                  | 04°05.79'N        | 04°00.00'N        | 05:22:19                   | 00°38.61'N        | 00°33.63'N        | 05:21:02                   | 108.8            | -0.25        | 2.03                   |
| 028°22.5'E                  | 04°03.19'N        | 03°57.40'N        | 05:22:24                   | 00°36.13'N        | 00°31.15'N        | 05:21:07                   | 108.8            | -0.25        | 2.03                   |
| 028°30.0'E                  | 04°00.60'N        | 03°54.81'N        | 05:22:30                   | 00°33.64'N        | 00°28.68'N        | 05:21:12                   | 108.7            | -0.25        | 2.03                   |
| 028°37.5'E                  | 03°58.01'N        | 03°52.22'N        | 05:22:35                   | 00°31.17'N        | 00°26.21'N        | 05:21:18                   | 108.7            | -0.26        | 2.03                   |
| 028°45.0'E                  | 03°55.43'N        | 03°49.64'N        | 05:22:40                   | 00°28.69'N        | 00°23.75'N        | 05:21:23                   | 108.6            | -0.26        | 2.03                   |
| 028°52.5'E                  | 03°52.86'N        | 03°47.07'N        | 05:22:45                   | 00°26.23'N        | 00°21.29'N        | 05:21:29                   | 108.6            | -0.26        | 2.03                   |
| 029°00.0'E                  | 03°50.29'N        | 03°44.50'N        | 05:22:51                   | 00°23.77'N        | 00°18.84'N        | 05:21:34                   | 108.6            | -0.26        | 2.03                   |
| 029°07.5'E                  | 03°47.73'N        | 03°41.94'N        | 05:22:56                   | 00°21.32'N        | 00°16.40'N        | 05:21:40                   | 108.5            | -0.26        | 2.03                   |
| 029°15.0'E                  | 03°45.17'N        | 03°39.38'N        | 05:23:02                   | 00°18.87'N        | 00°13.96'N        | 05:21:45                   | 108.5            | -0.26        | 2.03                   |
| 029°22.5'E                  | 03°42.62'N        | 03°36.83'N        | 05:23:07                   | 00°16.43'N        | 00°11.53'N        | 05:21:51                   | 108.4            | -0.26        | 2.03                   |
| 029°30.0'E                  | 03°40.07'N        | 03°34.29'N        | 05:23:13                   | 00°13.99'N        | 00°09.10'N        | 05:21:57                   | 108.4            | -0.26        | 2.03                   |
| 029°37.5'E                  | 03°37.54'N        | 03°31.75'N        | 05:23:19                   | 00°11.56'N        | 00°06.68'N        | 05:22:03                   | 108.3            | -0.26        | 2.03                   |
| 029°45.0'E                  | 03°35.00'N        | 03°29.22'N        | 05:23:24                   | 00°09.14'N        | 00°04.27'N        | 05:22:08                   | 108.3            | -0.26        | 2.03                   |
| 029°52.5'E                  | 03°32.48'N        | 03°26.70'N        | 05:23:30                   | 00°06.72'N        | 00°01.86'N        | 05:22:14                   | 108.3            | -0.26        | 2.03                   |
| 030°00.0'E                  | 03°29.96'N        | 03°24.18'N        | 05:23:36                   | 00°04.31'N        | 00°00.54'S        | 05:22:20                   | 108.2            | -0.26        | 2.03                   |
| 030°07.5'E                  | 03°27.45'N        | 03°21.67'N        | 05:23:42                   | 00°01.90'N        | 00°02.93'S        | 05:22:26                   | 108.2            | -0.26        | 2.03                   |
| 030°15.0'E                  | 03°24.94'N        | 03°19.16'N        | 05:23:48                   | 00°00.50'S        | 00°05.32'S        | 05:22:33                   | 108.1            | -0.26        | 2.03                   |
| 030°22.5'E                  | 03°22.44'N        | 03°16.67'N        | 05:23:54                   | 00°02.89'S        | 00°07.70'S        | 05:22:39                   | 108.1            | -0.26        | 2.03                   |
| 030°30.0'E                  | 03°19.95'N        | 03°14.17'N        | 05:24:00                   | 00°05.28'S        | 00°10.08'S        | 05:22:45                   | 108.0            | -0.26        | 2.03                   |
| 030°37.5'E                  | 03°17.46'N        | 03°11.69'N        | 05:24:07                   | 00°07.66'S        | 00°12.45'S        | 05:22:51                   | 108.0            | -0.27        | 2.03                   |
| 030°45.0'E                  | 03°14.98'N        | 03°09.21'N        | 05:24:13                   | 00°10.03'S        | 00°14.81'S        | 05:22:58                   | 107.9            | -0.27        | 2.03                   |
| 030°52.5'E                  | 03°12.51'N        | 03°06.74'N        | 05:24:19                   | 00°12.40'S        | 00°17.16'S        | 05:23:04                   | 107.9            | -0.27        | 2.03                   |
| 031°00.0'E                  | 03°10.04'N        | 03°04.28'N        | 05:24:26                   | 00°14.76'S        | 00°19.51'S        | 05:23:11                   | 107.9            | -0.27        | 2.03                   |
| 031°07.5'E                  | 03°07.58'N        | 03°01.82'N        | 05:24:32                   | 00°17.11'S        | 00°21.85'S        | 05:23:17                   | 107.8            | -0.27        | 2.03                   |
| 031°15.0'E                  | 03°05.13'N        | 02°59.37'N        | 05:24:39                   | 00°19.46'S        | 00°24.18'S        | 05:23:24                   | 107.8            | -0.27        | 2.03                   |
| 031°22.5'E                  | 03°02.69'N        | 02°56.93'N        | 05:24:45                   | 00°21.80'S        | 00°26.51'S        | 05:23:30                   | 107.7            | -0.27        | 2.03                   |
| 031°30.0'E                  | 03°00.25'N        | 02°54.50'N        | 05:24:52                   | 00°24.14'S        | 00°28.83'S        | 05:23:37                   | 107.7            | -0.27        | 2.03                   |
| 031°37.5'E                  | 02°57.82'N        | 02°52.07'N        | 05:24:59                   | 00°26.46'S        | 00°31.14'S        | 05:23:44                   | 107.6            | -0.27        | 2.04                   |
| 031°45.0'E                  | 02°55.39'N        | 02°49.65'N        | 05:25:06                   | 00°28.78'S        | 00°33.45'S        | 05:23:51                   | 107.6            | -0.27        | 2.04                   |
| 031°52.5'E                  | 02°52.98'N        | 02°47.24'N        | 05:25:12                   | 00°31.10'S        | 00°35.75'S        | 05:23:58                   | 107.5            | -0.27        | 2.04                   |
| 032°00.0'E                  | 02°50.57'N        | 02°44.83'N        | 05:25:19                   | 00°33.40'S        | 00°38.04'S        | 05:24:05                   | 107.5            | -0.27        | 2.04                   |
| 032°07.5'E                  | 02°48.16'N        | 02°42.44'N        | 05:25:26                   | 00°35.70'S        | 00°40.32'S        | 05:24:12                   | 107.4            | -0.27        | 2.04                   |
| 032°15.0'E                  | 02°45.77'N        | 02°40.05'N        | 05:25:34                   | 00°37.99'S        | 00°42.60'S        | 05:24:19                   | 107.4            | -0.27        | 2.04                   |
| 032°22.5'E                  | 02°43.38'N        | 02°37.66'N        | 05:25:41                   | 00°40.28'S        | 00°44.87'S        | 05:24:26                   | 107.3            | -0.27        | 2.04                   |
| 032°30.0'E                  | 02°41.00'N        | 02°35.29'N        | 05:25:48                   | 00°42.56'S        | 00°47.13'S        | 05:24:34                   | 107.3            | -0.28        | 2.04                   |
| 032°37.5'E                  | 02°38.63'N        | 02°32.92'N        | 05:25:55                   | 00°44.83'S        | 00°49.39'S        | 05:24:41                   | 107.2            | -0.28        | 2.04                   |
| 032°45.0'E                  | 02°36.26'N        | 02°30.56'N        | 05:26:03                   | 00°47.09'S        | 00°51.63'S        | 05:24:48                   | 107.2            | -0.28        | 2.04                   |
| 032°52.5'E                  | 02°33.91'N        | 02°28.21'N        | 05:26:10                   | 00°49.35'S        | 00°53.87'S        | 05:24:56                   | 107.1            | -0.28        | 2.04                   |
| 033°00.0'E                  | 02°31.59'N        | 02°25.87'N        | 05:26:18                   | 00°51.60'S        | 00°56.10'S        | 05:25:03                   | 107.0            | -0.28        | 2.04                   |
| 033°07.5'E                  | 02°29.23'N        | 02°23.53'N        | 05:26:25                   | 00°53.84'S        | 00°58.33'S        | 05:25:11                   | 107.0            | -0.28        | 2.04                   |
| 033°15.0'E                  | 02°26.72'N        | 02°21.21'N        | 05:26:33                   | 00°56.07'S        | 01°00.54'S        | 05:25:19                   | 106.9            | -0.28        | 2.04                   |
| 033°22.5'E                  | 02°24.23'N        | 02°18.89'N        | 05:26:41                   | 00°58.30'S        | 01°02.75'S        | 05:25:26                   | 106.9            | -0.28        | 2.04                   |
| 033°30.0'E                  | 02°21.90'N        | 02°16.56'N        | 05:26:48                   | 01°00.52'S        | 01°04.95'S        | 05:25:34                   | 106.8            | -0.28        | 2.04                   |
| 033°37.5'E                  | 02°19.62'N        | 02°14.23'N        | 05:26:56                   | 01°02.73'S        | 01°07.14'S        | 05:25:42                   | 106.8            | -0.28        | 2.04                   |
| 033°45.0'E                  | 02°17.31'N        | 02°11.91'N        | 05:27:04                   | 01°04.93'S        | 01°09.33'S        | 05:25:50                   | 106.7            | -0.28        | 2.04                   |
| 033°52.5'E                  | 02°15.02'N        | 02°09.59'N        | 05:27:12                   | 01°07.13'S        | 01°11.50'S        | 05:25:58                   | 106.7            | -0.28        | 2.04                   |
| 034°00.0'E                  | 02°12.73'N        | 02°07.29'N        | 05:27:20                   | 01°09.32'S        | 01°13.67'S        | 05:26:06                   | 106.6            | -0.28        | 2.04                   |

**ANNULAR SOLAR ECLIPSE OF 2010 JANUARY 15**

**TABLE 2.D – MAPPING COORDINATES FOR THE ZONES OF GRAZING ECLIPSE (EXTENDED)**

| ΔT = 66.0 s |                   |                   |                            |                   |                   |                            |                  |              |                        |
|-------------|-------------------|-------------------|----------------------------|-------------------|-------------------|----------------------------|------------------|--------------|------------------------|
| Longitude   | North Graze Zone  |                   | Northern                   | South Graze Zone  |                   | Southern                   | Path<br>Azm<br>° | Elev<br>Fact | Scale<br>Fact<br>km/'' |
|             | Latitudes         |                   | Limit                      | Latitudes         |                   | Limit                      |                  |              |                        |
|             | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s |                  |              |                        |
| 034°07.5'E  | 02°10.45'N        | 02°04.99'N        | 05:27:28                   | 01°11.50'S        | 01°15.83'S        | 05:26:14                   | 106.5            | -0.28        | 2.04                   |
| 034°15.0'E  | 02°08.18'N        | 02°02.70'N        | 05:27:37                   | 01°13.67'S        | 01°17.98'S        | 05:26:22                   | 106.5            | -0.29        | 2.04                   |
| 034°22.5'E  | 02°05.92'N        | 02°00.42'N        | 05:27:45                   | 01°15.83'S        | 01°20.13'S        | 05:26:31                   | 106.4            | -0.29        | 2.04                   |
| 034°30.0'E  | 02°03.68'N        | 01°58.15'N        | 05:27:53                   | 01°17.99'S        | 01°22.26'S        | 05:26:39                   | 106.4            | -0.29        | 2.04                   |
| 034°37.5'E  | 02°01.44'N        | 01°55.89'N        | 05:28:02                   | 01°20.14'S        | 01°24.39'S        | 05:26:47                   | 106.3            | -0.29        | 2.04                   |
| 034°45.0'E  | 01°59.11'N        | 01°53.64'N        | 05:28:10                   | 01°22.28'S        | 01°26.51'S        | 05:26:56                   | 106.2            | -0.29        | 2.04                   |
| 034°52.5'E  | 01°56.76'N        | 01°51.39'N        | 05:28:19                   | 01°24.41'S        | 01°28.61'S        | 05:27:04                   | 106.2            | -0.29        | 2.05                   |
| 035°00.0'E  | 01°54.53'N        | 01°49.16'N        | 05:28:28                   | 01°26.54'S        | 01°30.72'S        | 05:27:13                   | 106.1            | -0.29        | 2.05                   |
| 035°07.5'E  | 01°52.34'N        | 01°46.93'N        | 05:28:36                   | 01°28.65'S        | 01°32.81'S        | 05:27:22                   | 106.1            | -0.29        | 2.05                   |
| 035°15.0'E  | 01°50.14'N        | 01°44.71'N        | 05:28:45                   | 01°30.76'S        | 01°34.89'S        | 05:27:31                   | 106.0            | -0.29        | 2.05                   |
| 035°22.5'E  | 01°47.95'N        | 01°42.50'N        | 05:28:54                   | 01°32.86'S        | 01°36.96'S        | 05:27:39                   | 105.9            | -0.29        | 2.05                   |
| 035°30.0'E  | 01°45.77'N        | 01°40.31'N        | 05:29:03                   | 01°34.95'S        | 01°39.03'S        | 05:27:48                   | 105.9            | -0.29        | 2.05                   |
| 035°37.5'E  | 01°43.58'N        | 01°38.12'N        | 05:29:12                   | 01°37.03'S        | 01°41.09'S        | 05:27:57                   | 105.8            | -0.29        | 2.05                   |
| 035°45.0'E  | 01°41.39'N        | 01°35.93'N        | 05:29:21                   | 01°39.10'S        | 01°43.13'S        | 05:28:06                   | 105.7            | -0.29        | 2.05                   |
| 035°52.5'E  | 01°39.24'N        | 01°33.76'N        | 05:29:31                   | 01°41.17'S        | 01°45.15'S        | 05:28:15                   | 105.7            | -0.30        | 2.05                   |
| 036°00.0'E  | 01°37.10'N        | 01°31.60'N        | 05:29:40                   | 01°43.22'S        | 01°47.30'S        | 05:28:25                   | 105.6            | -0.30        | 2.05                   |
| 036°07.5'E  | 01°34.97'N        | 01°29.45'N        | 05:29:49                   | 01°45.27'S        | 01°49.49'S        | 05:28:34                   | 105.6            | -0.30        | 2.05                   |
| 036°15.0'E  | 01°32.84'N        | 01°27.31'N        | 05:29:59                   | 01°47.30'S        | 01°51.52'S        | 05:28:43                   | 105.5            | -0.30        | 2.05                   |
| 036°22.5'E  | 01°30.73'N        | 01°25.18'N        | 05:30:08                   | 01°49.31'S        | 01°53.50'S        | 05:28:53                   | 105.4            | -0.30        | 2.05                   |
| 036°30.0'E  | 01°28.62'N        | 01°23.05'N        | 05:30:18                   | 01°51.31'S        | 01°55.49'S        | 05:29:02                   | 105.4            | -0.30        | 2.05                   |
| 036°37.5'E  | 01°26.53'N        | 01°20.94'N        | 05:30:27                   | 01°53.30'S        | 01°57.47'S        | 05:29:12                   | 105.3            | -0.30        | 2.05                   |
| 036°45.0'E  | 01°24.44'N        | 01°18.84'N        | 05:30:37                   | 01°55.29'S        | 01°59.44'S        | 05:29:21                   | 105.2            | -0.30        | 2.05                   |
| 036°52.5'E  | 01°22.37'N        | 01°16.75'N        | 05:30:47                   | 01°57.26'S        | 02°01.40'S        | 05:29:31                   | 105.1            | -0.30        | 2.05                   |
| 037°00.0'E  | 01°20.30'N        | 01°14.67'N        | 05:30:57                   | 01°59.23'S        | 02°03.35'S        | 05:29:41                   | 105.1            | -0.30        | 2.05                   |
| 037°07.5'E  | 01°18.23'N        | 01°12.59'N        | 05:31:07                   | 02°01.18'S        | 02°05.29'S        | 05:29:51                   | 105.0            | -0.30        | 2.05                   |
| 037°15.0'E  | 01°16.17'N        | 01°10.53'N        | 05:31:17                   | 02°03.13'S        | 02°07.22'S        | 05:30:01                   | 104.9            | -0.30        | 2.05                   |
| 037°22.5'E  | 01°14.14'N        | 01°08.48'N        | 05:31:27                   | 02°05.06'S        | 02°09.14'S        | 05:30:11                   | 104.9            | -0.31        | 2.05                   |
| 037°30.0'E  | 01°12.12'N        | 01°06.44'N        | 05:31:37                   | 02°06.99'S        | 02°11.05'S        | 05:30:21                   | 104.8            | -0.31        | 2.05                   |
| 037°37.5'E  | 01°10.10'N        | 01°04.41'N        | 05:31:48                   | 02°08.91'S        | 02°12.98'S        | 05:30:31                   | 104.7            | -0.31        | 2.06                   |
| 037°45.0'E  | 01°08.09'N        | 01°02.39'N        | 05:31:58                   | 02°10.81'S        | 02°14.91'S        | 05:30:41                   | 104.6            | -0.31        | 2.06                   |
| 037°52.5'E  | 01°06.15'N        | 01°00.38'N        | 05:32:09                   | 02°12.71'S        | 02°16.79'S        | 05:30:51                   | 104.6            | -0.31        | 2.06                   |
| 038°00.0'E  | 01°04.25'N        | 00°58.39'N        | 05:32:19                   | 02°14.60'S        | 02°18.64'S        | 05:31:02                   | 104.5            | -0.31        | 2.06                   |
| 038°07.5'E  | 01°02.25'N        | 00°56.40'N        | 05:32:30                   | 02°16.48'S        | 02°20.52'S        | 05:31:12                   | 104.4            | -0.31        | 2.06                   |
| 038°15.0'E  | 01°00.24'N        | 00°54.43'N        | 05:32:40                   | 02°18.34'S        | 02°22.49'S        | 05:31:23                   | 104.3            | -0.31        | 2.06                   |
| 038°22.5'E  | 00°58.25'N        | 00°52.46'N        | 05:32:51                   | 02°20.20'S        | 02°24.40'S        | 05:31:33                   | 104.3            | -0.31        | 2.06                   |
| 038°30.0'E  | 00°56.27'N        | 00°50.51'N        | 05:33:02                   | 02°22.05'S        | 02°26.22'S        | 05:31:44                   | 104.2            | -0.31        | 2.06                   |
| 038°37.5'E  | 00°54.37'N        | 00°48.57'N        | 05:33:13                   | 02°23.89'S        | 02°28.00'S        | 05:31:55                   | 104.1            | -0.31        | 2.06                   |
| 038°45.0'E  | 00°52.60'N        | 00°46.64'N        | 05:33:24                   | 02°25.71'S        | 02°29.88'S        | 05:32:06                   | 104.0            | -0.31        | 2.06                   |
| 038°52.5'E  | 00°50.76'N        | 00°44.72'N        | 05:33:35                   | 02°27.53'S        | 02°31.85'S        | 05:32:17                   | 104.0            | -0.32        | 2.06                   |
| 039°00.0'E  | 00°48.80'N        | 00°42.82'N        | 05:33:46                   | 02°29.34'S        | 02°33.70'S        | 05:32:28                   | 103.9            | -0.32        | 2.06                   |
| 039°07.5'E  | 00°46.88'N        | 00°40.92'N        | 05:33:58                   | 02°31.13'S        | 02°35.45'S        | 05:32:39                   | 103.8            | -0.32        | 2.06                   |
| 039°15.0'E  | 00°44.97'N        | 00°39.04'N        | 05:34:09                   | 02°32.92'S        | 02°37.21'S        | 05:32:50                   | 103.7            | -0.32        | 2.06                   |
| 039°22.5'E  | 00°43.07'N        | 00°37.17'N        | 05:34:21                   | 02°34.70'S        | 02°38.95'S        | 05:33:01                   | 103.6            | -0.32        | 2.06                   |
| 039°30.0'E  | 00°41.18'N        | 00°35.31'N        | 05:34:32                   | 02°36.46'S        | 02°40.70'S        | 05:33:12                   | 103.6            | -0.32        | 2.06                   |
| 039°37.5'E  | 00°39.31'N        | 00°33.46'N        | 05:34:44                   | 02°38.21'S        | 02°42.52'S        | 05:33:24                   | 103.5            | -0.32        | 2.06                   |
| 039°45.0'E  | 00°37.45'N        | 00°31.64'N        | 05:34:56                   | 02°39.96'S        | 02°44.29'S        | 05:33:35                   | 103.4            | -0.32        | 2.06                   |
| 039°52.5'E  | 00°35.61'N        | 00°29.82'N        | 05:35:07                   | 02°41.69'S        | 02°45.98'S        | 05:33:47                   | 103.3            | -0.32        | 2.06                   |
| 040°00.0'E  | 00°33.76'N        | 00°28.01'N        | 05:35:19                   | 02°43.41'S        | 02°47.68'S        | 05:33:58                   | 103.2            | -0.32        | 2.07                   |

# ANNULAR SOLAR ECLIPSE OF 2010 JANUARY 15

## TABLE 2.D – MAPPING COORDINATES FOR THE ZONES OF GRAZING ECLIPSE (EXTENDED)

| $\Delta T = 66.0 \text{ s}$ |                   |                   |                            |                   |                   |                            |                  |              |                        |
|-----------------------------|-------------------|-------------------|----------------------------|-------------------|-------------------|----------------------------|------------------|--------------|------------------------|
| Longitude                   | North Graze Zone  |                   | Northern                   | South Graze Zone  |                   | Southern                   | Path<br>Azm<br>° | Elev<br>Fact | Scale<br>Fact<br>km/'' |
|                             | Latitudes         |                   | Limit                      | Latitudes         |                   | Limit                      |                  |              |                        |
|                             | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s |                  |              |                        |
| 040°07.5'E                  | 00°31.93'N        | 00°26.21'N        | 05:35:31                   | 02°45.12'S        | 02°49.36'S        | 05:34:10                   | 103.1            | -0.33        | 2.07                   |
| 040°15.0'E                  | 00°30.11'N        | 00°24.43'N        | 05:35:43                   | 02°46.82'S        | 02°51.03'S        | 05:34:22                   | 103.1            | -0.33        | 2.07                   |
| 040°22.5'E                  | 00°28.31'N        | 00°22.66'N        | 05:35:55                   | 02°48.51'S        | 02°52.69'S        | 05:34:34                   | 103.0            | -0.33        | 2.07                   |
| 040°30.0'E                  | 00°26.52'N        | 00°20.90'N        | 05:36:08                   | 02°50.18'S        | 02°54.34'S        | 05:34:46                   | 102.9            | -0.33        | 2.07                   |
| 040°37.5'E                  | 00°24.73'N        | 00°19.15'N        | 05:36:20                   | 02°51.84'S        | 02°55.97'S        | 05:34:58                   | 102.8            | -0.33        | 2.07                   |
| 040°45.0'E                  | 00°22.96'N        | 00°17.42'N        | 05:36:32                   | 02°53.49'S        | 02°57.60'S        | 05:35:10                   | 102.7            | -0.33        | 2.07                   |
| 040°52.5'E                  | 00°21.21'N        | 00°15.70'N        | 05:36:45                   | 02°55.14'S        | 02°59.21'S        | 05:35:22                   | 102.6            | -0.33        | 2.07                   |
| 041°00.0'E                  | 00°19.46'N        | 00°14.00'N        | 05:36:57                   | 02°56.77'S        | 03°00.80'S        | 05:35:34                   | 102.5            | -0.33        | 2.07                   |
| 041°07.5'E                  | 00°17.73'N        | 00°12.30'N        | 05:37:10                   | 02°58.39'S        | 03°02.39'S        | 05:35:46                   | 102.4            | -0.33        | 2.07                   |
| 041°15.0'E                  | 00°16.01'N        | 00°10.62'N        | 05:37:23                   | 03°00.00'S        | 03°03.97'S        | 05:35:59                   | 102.3            | -0.33        | 2.07                   |
| 041°22.5'E                  | 00°14.31'N        | 00°08.96'N        | 05:37:36                   | 03°01.60'S        | 03°05.55'S        | 05:36:11                   | 102.2            | -0.33        | 2.07                   |
| 041°30.0'E                  | 00°12.61'N        | 00°07.31'N        | 05:37:49                   | 03°03.18'S        | 03°07.10'S        | 05:36:24                   | 102.2            | -0.34        | 2.07                   |
| 041°37.5'E                  | 00°10.93'N        | 00°05.67'N        | 05:38:02                   | 03°04.76'S        | 03°08.61'S        | 05:36:37                   | 102.1            | -0.34        | 2.07                   |
| 041°45.0'E                  | 00°09.27'N        | 00°04.05'N        | 05:38:15                   | 03°06.32'S        | 03°10.13'S        | 05:36:49                   | 102.0            | -0.34        | 2.07                   |
| 041°52.5'E                  | 00°07.61'N        | 00°02.44'N        | 05:38:28                   | 03°07.87'S        | 03°11.67'S        | 05:37:02                   | 101.9            | -0.34        | 2.07                   |
| 042°00.0'E                  | 00°05.97'N        | 00°00.84'N        | 05:38:41                   | 03°09.41'S        | 03°13.19'S        | 05:37:15                   | 101.8            | -0.34        | 2.08                   |
| 042°07.5'E                  | 00°04.34'N        | 00°00.74'S        | 05:38:55                   | 03°10.93'S        | 03°14.67'S        | 05:37:28                   | 101.7            | -0.34        | 2.08                   |
| 042°15.0'E                  | 00°02.73'N        | 00°02.30'S        | 05:39:08                   | 03°12.45'S        | 03°16.16'S        | 05:37:41                   | 101.6            | -0.34        | 2.08                   |
| 042°22.5'E                  | 00°01.13'N        | 00°03.86'S        | 05:39:22                   | 03°13.95'S        | 03°17.68'S        | 05:37:54                   | 101.5            | -0.34        | 2.08                   |
| 042°30.0'E                  | 00°00.46'S        | 00°05.39'S        | 05:39:36                   | 03°15.44'S        | 03°19.18'S        | 05:38:08                   | 101.4            | -0.34        | 2.08                   |
| 042°37.5'E                  | 00°02.03'S        | 00°06.92'S        | 05:39:49                   | 03°16.91'S        | 03°20.58'S        | 05:38:21                   | 101.3            | -0.35        | 2.08                   |
| 042°45.0'E                  | 00°03.59'S        | 00°08.42'S        | 05:40:03                   | 03°18.38'S        | 03°21.94'S        | 05:38:34                   | 101.2            | -0.35        | 2.08                   |
| 042°52.5'E                  | 00°05.14'S        | 00°09.92'S        | 05:40:17                   | 03°19.83'S        | 03°23.39'S        | 05:38:48                   | 101.1            | -0.35        | 2.08                   |
| 043°00.0'E                  | 00°06.67'S        | 00°11.39'S        | 05:40:31                   | 03°21.27'S        | 03°24.75'S        | 05:39:02                   | 101.0            | -0.35        | 2.08                   |
| 043°07.5'E                  | 00°08.19'S        | 00°12.85'S        | 05:40:45                   | 03°22.69'S        | 03°26.03'S        | 05:39:15                   | 100.9            | -0.35        | 2.08                   |
| 043°15.0'E                  | 00°09.69'S        | 00°14.30'S        | 05:41:00                   | 03°24.09'S        | 03°27.39'S        | 05:39:29                   | 100.8            | -0.35        | 2.08                   |
| 043°22.5'E                  | 00°11.18'S        | 00°15.73'S        | 05:41:14                   | 03°25.46'S        | 03°28.75'S        | 05:39:43                   | 100.7            | -0.35        | 2.08                   |
| 043°30.0'E                  | 00°12.65'S        | 00°17.15'S        | 05:41:28                   | 03°26.82'S        | 03°30.08'S        | 05:39:57                   | 100.6            | -0.35        | 2.08                   |
| 043°37.5'E                  | 00°14.11'S        | 00°18.55'S        | 05:41:43                   | 03°28.17'S        | 03°31.41'S        | 05:40:11                   | 100.5            | -0.35        | 2.08                   |
| 043°45.0'E                  | 00°15.56'S        | 00°19.93'S        | 05:41:58                   | 03°29.51'S        | 03°32.71'S        | 05:40:25                   | 100.4            | -0.35        | 2.08                   |
| 043°52.5'E                  | 00°16.99'S        | 00°21.30'S        | 05:42:12                   | 03°30.83'S        | 03°34.01'S        | 05:40:39                   | 100.2            | -0.36        | 2.09                   |
| 044°00.0'E                  | 00°18.40'S        | 00°22.67'S        | 05:42:27                   | 03°32.14'S        | 03°35.29'S        | 05:40:53                   | 100.1            | -0.36        | 2.09                   |
| 044°07.5'E                  | 00°19.80'S        | 00°24.08'S        | 05:42:42                   | 03°33.44'S        | 03°36.58'S        | 05:41:08                   | 100.0            | -0.36        | 2.09                   |
| 044°15.0'E                  | 00°21.19'S        | 00°25.47'S        | 05:42:57                   | 03°34.72'S        | 03°37.88'S        | 05:41:22                   | 99.9             | -0.36        | 2.09                   |
| 044°22.5'E                  | 00°22.55'S        | 00°26.84'S        | 05:43:12                   | 03°35.99'S        | 03°39.16'S        | 05:41:37                   | 99.8             | -0.36        | 2.09                   |
| 044°30.0'E                  | 00°23.91'S        | 00°28.20'S        | 05:43:27                   | 03°37.24'S        | 03°40.43'S        | 05:41:51                   | 99.7             | -0.36        | 2.09                   |
| 044°37.5'E                  | 00°25.25'S        | 00°29.54'S        | 05:43:43                   | 03°38.48'S        | 03°41.69'S        | 05:42:06                   | 99.6             | -0.36        | 2.09                   |
| 044°45.0'E                  | 00°26.57'S        | 00°30.86'S        | 05:43:58                   | 03°39.71'S        | 03°42.94'S        | 05:42:21                   | 99.5             | -0.36        | 2.09                   |
| 044°52.5'E                  | 00°27.88'S        | 00°32.17'S        | 05:44:13                   | 03°40.92'S        | 03°44.03'S        | 05:42:36                   | 99.4             | -0.36        | 2.09                   |
| 045°00.0'E                  | 00°29.17'S        | 00°33.46'S        | 05:44:29                   | 03°42.12'S        | 03°45.13'S        | 05:42:51                   | 99.2             | -0.37        | 2.09                   |
| 045°07.5'E                  | 00°30.45'S        | 00°34.73'S        | 05:44:45                   | 03°43.30'S        | 03°46.33'S        | 05:43:06                   | 99.1             | -0.37        | 2.09                   |
| 045°15.0'E                  | 00°31.70'S        | 00°35.98'S        | 05:45:00                   | 03°44.47'S        | 03°47.52'S        | 05:43:21                   | 99.0             | -0.37        | 2.09                   |
| 045°22.5'E                  | 00°32.95'S        | 00°37.22'S        | 05:45:16                   | 03°45.62'S        | 03°48.68'S        | 05:43:36                   | 98.9             | -0.37        | 2.09                   |
| 045°30.0'E                  | 00°34.17'S        | 00°38.45'S        | 05:45:32                   | 03°46.75'S        | 03°49.82'S        | 05:43:52                   | 98.8             | -0.37        | 2.09                   |
| 045°37.5'E                  | 00°35.39'S        | 00°39.65'S        | 05:45:48                   | 03°47.84'S        | 03°50.95'S        | 05:44:07                   | 98.6             | -0.37        | 2.10                   |
| 045°45.0'E                  | 00°36.58'S        | 00°40.83'S        | 05:46:05                   | 03°48.90'S        | 03°52.07'S        | 05:44:23                   | 98.5             | -0.37        | 2.10                   |
| 045°52.5'E                  | 00°37.76'S        | 00°42.02'S        | 05:46:21                   | 03°49.95'S        | 03°53.17'S        | 05:44:38                   | 98.4             | -0.37        | 2.10                   |
| 046°00.0'E                  | 00°38.92'S        | 00°43.20'S        | 05:46:37                   | 03°50.98'S        | 03°54.26'S        | 05:44:54                   | 98.3             | -0.37        | 2.10                   |

# ANNULAR SOLAR ECLIPSE OF 2010 JANUARY 15

## TABLE 2.D – MAPPING COORDINATES FOR THE ZONES OF GRAZING ECLIPSE (EXTENDED)

| $\Delta T = 66.0 \text{ s}$ |                   |                   |                            |                   |                   |                            |                  |              |                        |
|-----------------------------|-------------------|-------------------|----------------------------|-------------------|-------------------|----------------------------|------------------|--------------|------------------------|
| Longitude                   | North Graze Zone  |                   | Northern                   | South Graze Zone  |                   | Southern                   | Path<br>Azm<br>° | Elev<br>Fact | Scale<br>Fact<br>km/'' |
|                             | Latitudes         |                   | Limit                      | Latitudes         |                   | Limit                      |                  |              |                        |
|                             | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s |                  |              |                        |
| 046°07.5'E                  | 00°40.06'S        | 00°44.37'S        | 05:46:54                   | 03°52.00'S        | 03°55.34'S        | 05:45:10                   | 98.2             | -0.38        | 2.10                   |
| 046°15.0'E                  | 00°41.19'S        | 00°45.52'S        | 05:47:10                   | 03°53.00'S        | 03°56.37'S        | 05:45:26                   | 98.0             | -0.38        | 2.10                   |
| 046°22.5'E                  | 00°42.30'S        | 00°46.65'S        | 05:47:27                   | 03°53.99'S        | 03°57.36'S        | 05:45:42                   | 97.9             | -0.38        | 2.10                   |
| 046°30.0'E                  | 00°43.39'S        | 00°47.76'S        | 05:47:44                   | 03°54.96'S        | 03°58.36'S        | 05:45:58                   | 97.8             | -0.38        | 2.10                   |
| 046°37.5'E                  | 00°44.46'S        | 00°48.86'S        | 05:48:01                   | 03°55.91'S        | 03°59.37'S        | 05:46:14                   | 97.6             | -0.38        | 2.10                   |
| 046°45.0'E                  | 00°45.52'S        | 00°49.93'S        | 05:48:18                   | 03°56.85'S        | 04°00.36'S        | 05:46:30                   | 97.5             | -0.38        | 2.10                   |
| 046°52.5'E                  | 00°46.56'S        | 00°50.99'S        | 05:48:35                   | 03°57.78'S        | 04°01.35'S        | 05:46:47                   | 97.4             | -0.38        | 2.10                   |
| 047°00.0'E                  | 00°47.58'S        | 00°52.03'S        | 05:48:52                   | 03°58.68'S        | 04°02.20'S        | 05:47:03                   | 97.3             | -0.38        | 2.10                   |
| 047°07.5'E                  | 00°48.59'S        | 00°53.05'S        | 05:49:09                   | 03°59.58'S        | 04°02.94'S        | 05:47:20                   | 97.1             | -0.38        | 2.11                   |
| 047°15.0'E                  | 00°49.57'S        | 00°54.05'S        | 05:49:27                   | 04°00.45'S        | 04°03.84'S        | 05:47:36                   | 97.0             | -0.39        | 2.11                   |
| 047°22.5'E                  | 00°50.54'S        | 00°55.03'S        | 05:49:44                   | 04°01.31'S        | 04°04.85'S        | 05:47:53                   | 96.9             | -0.39        | 2.11                   |
| 047°30.0'E                  | 00°51.49'S        | 00°56.00'S        | 05:50:02                   | 04°02.16'S        | 04°05.79'S        | 05:48:10                   | 96.7             | -0.39        | 2.11                   |
| 047°37.5'E                  | 00°52.42'S        | 00°56.94'S        | 05:50:20                   | 04°02.98'S        | 04°06.60'S        | 05:48:27                   | 96.6             | -0.39        | 2.11                   |
| 047°45.0'E                  | 00°53.33'S        | 00°57.86'S        | 05:50:37                   | 04°03.80'S        | 04°07.58'S        | 05:48:44                   | 96.5             | -0.39        | 2.11                   |
| 047°52.5'E                  | 00°54.23'S        | 00°58.77'S        | 05:50:55                   | 04°04.59'S        | 04°08.50'S        | 05:49:01                   | 96.3             | -0.39        | 2.11                   |
| 048°00.0'E                  | 00°55.10'S        | 00°59.65'S        | 05:51:13                   | 04°05.37'S        | 04°09.24'S        | 05:49:18                   | 96.2             | -0.39        | 2.11                   |
| 048°07.5'E                  | 00°55.96'S        | 01°00.51'S        | 05:51:32                   | 04°06.13'S        | 04°10.06'S        | 05:49:36                   | 96.0             | -0.39        | 2.11                   |
| 048°15.0'E                  | 00°56.80'S        | 01°01.35'S        | 05:51:50                   | 04°06.88'S        | 04°10.83'S        | 05:49:53                   | 95.9             | -0.39        | 2.11                   |
| 048°22.5'E                  | 00°57.61'S        | 01°02.18'S        | 05:52:08                   | 04°07.61'S        | 04°11.52'S        | 05:50:11                   | 95.8             | -0.40        | 2.11                   |
| 048°30.0'E                  | 00°58.41'S        | 01°02.98'S        | 05:52:27                   | 04°08.32'S        | 04°12.21'S        | 05:50:28                   | 95.6             | -0.40        | 2.11                   |
| 048°37.5'E                  | 00°59.19'S        | 01°03.76'S        | 05:52:45                   | 04°09.01'S        | 04°12.88'S        | 05:50:46                   | 95.5             | -0.40        | 2.12                   |
| 048°45.0'E                  | 00°59.95'S        | 01°04.51'S        | 05:53:04                   | 04°09.69'S        | 04°13.53'S        | 05:51:04                   | 95.3             | -0.40        | 2.12                   |
| 048°52.5'E                  | 01°00.69'S        | 01°05.25'S        | 05:53:23                   | 04°10.35'S        | 04°14.16'S        | 05:51:22                   | 95.2             | -0.40        | 2.12                   |
| 049°00.0'E                  | 01°01.41'S        | 01°05.97'S        | 05:53:42                   | 04°10.99'S        | 04°14.76'S        | 05:51:40                   | 95.0             | -0.40        | 2.12                   |
| 049°07.5'E                  | 01°02.11'S        | 01°06.66'S        | 05:54:01                   | 04°11.62'S        | 04°15.39'S        | 05:51:58                   | 94.9             | -0.40        | 2.12                   |
| 049°15.0'E                  | 01°02.78'S        | 01°07.34'S        | 05:54:20                   | 04°12.22'S        | 04°15.99'S        | 05:52:16                   | 94.7             | -0.40        | 2.12                   |
| 049°22.5'E                  | 01°03.44'S        | 01°07.99'S        | 05:54:39                   | 04°12.79'S        | 04°16.55'S        | 05:52:34                   | 94.6             | -0.41        | 2.12                   |
| 049°30.0'E                  | 01°04.08'S        | 01°08.62'S        | 05:54:58                   | 04°13.35'S        | 04°17.12'S        | 05:52:52                   | 94.4             | -0.41        | 2.12                   |
| 049°37.5'E                  | 01°04.70'S        | 01°09.22'S        | 05:55:18                   | 04°13.89'S        | 04°17.63'S        | 05:53:11                   | 94.3             | -0.41        | 2.12                   |
| 049°45.0'E                  | 01°05.30'S        | 01°09.81'S        | 05:55:37                   | 04°14.41'S        | 04°18.10'S        | 05:53:30                   | 94.1             | -0.41        | 2.12                   |
| 049°52.5'E                  | 01°05.87'S        | 01°10.37'S        | 05:55:57                   | 04°14.91'S        | 04°18.61'S        | 05:53:48                   | 94.0             | -0.41        | 2.12                   |
| 050°00.0'E                  | 01°06.42'S        | 01°10.91'S        | 05:56:17                   | 04°15.39'S        | 04°19.06'S        | 05:54:07                   | 93.8             | -0.41        | 2.12                   |
| 050°07.5'E                  | 01°06.96'S        | 01°11.42'S        | 05:56:37                   | 04°15.86'S        | 04°19.52'S        | 05:54:26                   | 93.7             | -0.41        | 2.13                   |
| 050°15.0'E                  | 01°07.47'S        | 01°11.91'S        | 05:56:57                   | 04°16.31'S        | 04°20.00'S        | 05:54:45                   | 93.5             | -0.41        | 2.13                   |
| 050°22.5'E                  | 01°07.96'S        | 01°12.38'S        | 05:57:17                   | 04°16.73'S        | 04°20.35'S        | 05:55:04                   | 93.3             | -0.41        | 2.13                   |
| 050°30.0'E                  | 01°08.43'S        | 01°12.83'S        | 05:57:37                   | 04°17.15'S        | 04°20.78'S        | 05:55:23                   | 93.2             | -0.42        | 2.13                   |
| 050°37.5'E                  | 01°08.88'S        | 01°13.25'S        | 05:57:58                   | 04°17.54'S        | 04°21.13'S        | 05:55:42                   | 93.0             | -0.42        | 2.13                   |
| 050°45.0'E                  | 01°09.28'S        | 01°13.64'S        | 05:58:18                   | 04°17.91'S        | 04°21.34'S        | 05:56:02                   | 92.9             | -0.42        | 2.13                   |
| 050°52.5'E                  | 01°09.62'S        | 01°13.99'S        | 05:58:39                   | 04°18.26'S        | 04°21.71'S        | 05:56:21                   | 92.7             | -0.42        | 2.13                   |
| 051°00.0'E                  | 01°09.98'S        | 01°14.33'S        | 05:58:59                   | 04°18.60'S        | 04°22.14'S        | 05:56:41                   | 92.5             | -0.42        | 2.13                   |
| 051°07.5'E                  | 01°10.30'S        | 01°14.66'S        | 05:59:20                   | 04°18.90'S        | 04°22.50'S        | 05:57:00                   | 92.4             | -0.42        | 2.13                   |
| 051°15.0'E                  | 01°10.57'S        | 01°14.96'S        | 05:59:41                   | 04°19.17'S        | 04°22.73'S        | 05:57:20                   | 92.2             | -0.42        | 2.13                   |
| 051°22.5'E                  | 01°10.83'S        | 01°15.23'S        | 06:00:02                   | 04°19.42'S        | 04°22.96'S        | 05:57:40                   | 92.0             | -0.42        | 2.13                   |
| 051°30.0'E                  | 01°11.06'S        | 01°15.48'S        | 06:00:23                   | 04°19.65'S        | 04°23.17'S        | 05:58:00                   | 91.9             | -0.42        | 2.13                   |
| 051°37.5'E                  | 01°11.26'S        | 01°15.70'S        | 06:00:44                   | 04°19.86'S        | 04°23.36'S        | 05:58:20                   | 91.7             | -0.43        | 2.14                   |
| 051°45.0'E                  | 01°11.45'S        | 01°15.90'S        | 06:01:06                   | 04°20.06'S        | 04°23.56'S        | 05:58:40                   | 91.5             | -0.43        | 2.14                   |
| 051°52.5'E                  | 01°11.61'S        | 01°16.08'S        | 06:01:27                   | 04°20.23'S        | 04°23.75'S        | 05:59:01                   | 91.4             | -0.43        | 2.14                   |
| 052°00.0'E                  | 01°11.75'S        | 01°16.22'S        | 06:01:49                   | 04°20.38'S        | 04°23.93'S        | 05:59:21                   | 91.2             | -0.43        | 2.14                   |

ANNULAR SOLAR ECLIPSE OF 2010 JANUARY 15

TABLE 2.D – MAPPING COORDINATES FOR THE ZONES OF GRAZING ECLIPSE (EXTENDED)

ΔT = 66.0 s

| Longitude  | North Graze Zone  |                   | Northern                   | South Graze Zone  |                   | Southern                   | Path<br>Azm<br>° | Elev<br>Fact | Scale<br>Fact<br>km/'' |
|------------|-------------------|-------------------|----------------------------|-------------------|-------------------|----------------------------|------------------|--------------|------------------------|
|            | Latitudes         |                   | Limit                      | Latitudes         |                   | Limit                      |                  |              |                        |
|            | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s |                  |              |                        |
| 052°07.5'E | 01°11.86'S        | 01°16.34'S        | 06:02:11                   | 04°20.51'S        | 04°24.10'S        | 05:59:42                   | 91.0             | -0.43        | 2.14                   |
| 052°15.0'E | 01°11.95'S        | 01°16.44'S        | 06:02:32                   | 04°20.62'S        | 04°24.25'S        | 06:00:02                   | 90.8             | -0.43        | 2.14                   |
| 052°22.5'E | 01°12.01'S        | 01°16.51'S        | 06:02:54                   | 04°20.71'S        | 04°24.37'S        | 06:00:23                   | 90.7             | -0.43        | 2.14                   |
| 052°30.0'E | 01°12.05'S        | 01°16.55'S        | 06:03:16                   | 04°20.78'S        | 04°24.47'S        | 06:00:44                   | 90.5             | -0.43        | 2.14                   |
| 052°37.5'E | 01°12.06'S        | 01°16.56'S        | 06:03:39                   | 04°20.83'S        | 04°24.57'S        | 06:01:05                   | 90.3             | -0.43        | 2.14                   |
| 052°45.0'E | 01°12.05'S        | 01°16.55'S        | 06:04:01                   | 04°20.86'S        | 04°24.60'S        | 06:01:26                   | 90.1             | -0.44        | 2.14                   |
| 052°52.5'E | 01°11.99'S        | 01°16.51'S        | 06:04:23                   | 04°20.87'S        | 04°24.45'S        | 06:01:47                   | 89.9             | -0.44        | 2.14                   |
| 053°00.0'E | 01°12.02'S        | 01°16.44'S        | 06:04:46                   | 04°20.86'S        | 04°24.42'S        | 06:02:08                   | 89.7             | -0.44        | 2.14                   |
| 053°07.5'E | 01°12.12'S        | 01°16.34'S        | 06:05:09                   | 04°20.82'S        | 04°24.43'S        | 06:02:29                   | 89.6             | -0.44        | 2.15                   |
| 053°15.0'E | 01°12.01'S        | 01°16.22'S        | 06:05:31                   | 04°20.77'S        | 04°24.39'S        | 06:02:51                   | 89.4             | -0.44        | 2.15                   |
| 053°22.5'E | 01°11.86'S        | 01°16.07'S        | 06:05:54                   | 04°20.70'S        | 04°24.33'S        | 06:03:12                   | 89.2             | -0.44        | 2.15                   |
| 053°30.0'E | 01°11.70'S        | 01°15.89'S        | 06:06:17                   | 04°20.60'S        | 04°24.25'S        | 06:03:34                   | 89.0             | -0.44        | 2.15                   |
| 053°37.5'E | 01°11.51'S        | 01°15.68'S        | 06:06:40                   | 04°20.48'S        | 04°24.17'S        | 06:03:56                   | 88.8             | -0.44        | 2.15                   |
| 053°45.0'E | 01°11.31'S        | 01°15.44'S        | 06:07:04                   | 04°20.34'S        | 04°23.97'S        | 06:04:18                   | 88.6             | -0.44        | 2.15                   |
| 053°52.5'E | 01°11.18'S        | 01°15.17'S        | 06:07:27                   | 04°20.17'S        | 04°23.63'S        | 06:04:40                   | 88.4             | -0.44        | 2.15                   |
| 054°00.0'E | 01°10.93'S        | 01°14.87'S        | 06:07:50                   | 04°19.98'S        | 04°23.37'S        | 06:05:02                   | 88.2             | -0.45        | 2.15                   |
| 054°07.5'E | 01°10.63'S        | 01°14.55'S        | 06:08:14                   | 04°19.77'S        | 04°23.10'S        | 06:05:24                   | 88.0             | -0.45        | 2.15                   |
| 054°15.0'E | 01°10.32'S        | 01°14.19'S        | 06:08:38                   | 04°19.53'S        | 04°22.80'S        | 06:05:46                   | 87.9             | -0.45        | 2.15                   |
| 054°22.5'E | 01°09.97'S        | 01°13.81'S        | 06:09:02                   | 04°19.27'S        | 04°22.47'S        | 06:06:09                   | 87.7             | -0.45        | 2.15                   |
| 054°30.0'E | 01°09.60'S        | 01°13.39'S        | 06:09:26                   | 04°18.99'S        | 04°22.13'S        | 06:06:31                   | 87.5             | -0.45        | 2.15                   |
| 054°37.5'E | 01°09.20'S        | 01°12.94'S        | 06:09:50                   | 04°18.68'S        | 04°21.83'S        | 06:06:54                   | 87.3             | -0.45        | 2.16                   |
| 054°45.0'E | 01°08.78'S        | 01°12.46'S        | 06:10:14                   | 04°18.32'S        | 04°21.43'S        | 06:07:17                   | 87.1             | -0.45        | 2.16                   |
| 054°52.5'E | 01°08.32'S        | 01°11.96'S        | 06:10:38                   | 04°17.93'S        | 04°21.12'S        | 06:07:39                   | 86.9             | -0.45        | 2.16                   |
| 055°00.0'E | 01°07.84'S        | 01°11.42'S        | 06:11:03                   | 04°17.51'S        | 04°20.89'S        | 06:08:02                   | 86.7             | -0.45        | 2.16                   |
| 055°07.5'E | 01°07.33'S        | 01°10.85'S        | 06:11:27                   | 04°17.07'S        | 04°20.40'S        | 06:08:25                   | 86.5             | -0.45        | 2.16                   |
| 055°15.0'E | 01°06.79'S        | 01°10.24'S        | 06:11:52                   | 04°16.60'S        | 04°19.87'S        | 06:08:49                   | 86.3             | -0.46        | 2.16                   |
| 055°22.5'E | 01°06.22'S        | 01°09.60'S        | 06:12:17                   | 04°16.11'S        | 04°19.54'S        | 06:09:12                   | 86.0             | -0.46        | 2.16                   |
| 055°30.0'E | 01°05.62'S        | 01°09.10'S        | 06:12:42                   | 04°15.59'S        | 04°19.14'S        | 06:09:35                   | 85.8             | -0.46        | 2.16                   |
| 055°37.5'E | 01°05.00'S        | 01°08.63'S        | 06:13:07                   | 04°15.03'S        | 04°18.58'S        | 06:09:59                   | 85.6             | -0.46        | 2.16                   |
| 055°45.0'E | 01°04.34'S        | 01°08.11'S        | 06:13:32                   | 04°14.43'S        | 04°18.16'S        | 06:10:22                   | 85.4             | -0.46        | 2.16                   |
| 055°52.5'E | 01°03.66'S        | 01°07.56'S        | 06:13:57                   | 04°13.82'S        | 04°17.52'S        | 06:10:46                   | 85.2             | -0.46        | 2.16                   |
| 056°00.0'E | 01°02.94'S        | 01°06.98'S        | 06:14:23                   | 04°13.16'S        | 04°17.08'S        | 06:11:10                   | 85.0             | -0.46        | 2.16                   |
| 056°07.5'E | 01°02.20'S        | 01°06.37'S        | 06:14:48                   | 04°12.46'S        | 04°16.85'S        | 06:11:34                   | 84.8             | -0.46        | 2.16                   |
| 056°15.0'E | 01°01.41'S        | 01°05.72'S        | 06:15:14                   | 04°11.75'S        | 04°16.46'S        | 06:11:58                   | 84.6             | -0.46        | 2.16                   |
| 056°22.5'E | 01°00.72'S        | 01°05.04'S        | 06:15:40                   | 04°11.00'S        | 04°15.69'S        | 06:12:22                   | 84.4             | -0.46        | 2.17                   |
| 056°30.0'E | 00°59.96'S        | 01°04.33'S        | 06:16:05                   | 04°10.24'S        | 04°15.04'S        | 06:12:46                   | 84.1             | -0.46        | 2.17                   |
| 056°37.5'E | 00°59.13'S        | 01°03.59'S        | 06:16:32                   | 04°09.45'S        | 04°14.26'S        | 06:13:11                   | 83.9             | -0.46        | 2.17                   |
| 056°45.0'E | 00°58.35'S        | 01°02.81'S        | 06:16:58                   | 04°08.63'S        | 04°13.53'S        | 06:13:35                   | 83.7             | -0.47        | 2.17                   |
| 056°52.5'E | 00°57.42'S        | 01°02.01'S        | 06:17:24                   | 04°07.80'S        | 04°12.83'S        | 06:14:00                   | 83.5             | -0.47        | 2.17                   |
| 057°00.0'E | 00°56.55'S        | 01°01.16'S        | 06:17:50                   | 04°06.93'S        | 04°11.96'S        | 06:14:24                   | 83.3             | -0.47        | 2.17                   |
| 057°07.5'E | 00°55.59'S        | 01°00.29'S        | 06:18:17                   | 04°06.04'S        | 04°11.05'S        | 06:14:49                   | 83.1             | -0.47        | 2.17                   |
| 057°15.0'E | 00°54.56'S        | 00°59.38'S        | 06:18:43                   | 04°05.13'S        | 04°10.12'S        | 06:15:14                   | 82.8             | -0.47        | 2.17                   |
| 057°22.5'E | 00°53.52'S        | 00°58.43'S        | 06:19:10                   | 04°04.19'S        | 04°09.12'S        | 06:15:39                   | 82.6             | -0.47        | 2.17                   |
| 057°30.0'E | 00°52.44'S        | 00°57.45'S        | 06:19:37                   | 04°03.22'S        | 04°08.27'S        | 06:16:04                   | 82.4             | -0.47        | 2.17                   |
| 057°37.5'E | 00°51.32'S        | 00°56.44'S        | 06:20:04                   | 04°02.23'S        | 04°07.59'S        | 06:16:29                   | 82.2             | -0.47        | 2.17                   |
| 057°45.0'E | 00°50.19'S        | 00°55.39'S        | 06:20:31                   | 04°01.22'S        | 04°06.75'S        | 06:16:55                   | 81.9             | -0.47        | 2.17                   |
| 057°52.5'E | 00°49.15'S        | 00°54.31'S        | 06:20:58                   | 04°00.17'S        | 04°05.67'S        | 06:17:20                   | 81.7             | -0.47        | 2.17                   |
| 058°00.0'E | 00°47.91'S        | 00°53.18'S        | 06:21:26                   | 03°59.11'S        | 04°04.65'S        | 06:17:46                   | 81.5             | -0.47        | 2.17                   |

## ANNULAR SOLAR ECLIPSE OF 2010 JANUARY 15

### TABLE 2.D – MAPPING COORDINATES FOR THE ZONES OF GRAZING ECLIPSE (EXTENDED)

| ΔT = 66.0 s |                   |                   |                            |                   |                   |                            |                  |              |                        |
|-------------|-------------------|-------------------|----------------------------|-------------------|-------------------|----------------------------|------------------|--------------|------------------------|
| Longitude   | North Graze Zone  |                   | Northern                   | South Graze Zone  |                   | Southern                   | Path<br>Azm<br>° | Elev<br>Fact | Scale<br>Fact<br>km/'' |
|             | Latitudes         |                   | Limit                      | Latitudes         |                   | Limit                      |                  |              |                        |
|             | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s |                  |              |                        |
| 058°07.5'E  | 00°47.14'S        | 00°52.06'S        | 06:21:53                   | 03°58.01'S        | 04°03.54'S        | 06:18:11                   | 81.3             | -0.47        | 2.17                   |
| 058°15.0'E  | 00°46.36'S        | 00°50.88'S        | 06:22:21                   | 03°56.89'S        | 04°02.44'S        | 06:18:37                   | 81.0             | -0.47        | 2.17                   |
| 058°22.5'E  | 00°45.18'S        | 00°49.68'S        | 06:22:49                   | 03°55.75'S        | 04°01.38'S        | 06:19:03                   | 80.8             | -0.47        | 2.17                   |
| 058°30.0'E  | 00°43.83'S        | 00°48.45'S        | 06:23:16                   | 03°54.58'S        | 04°00.14'S        | 06:19:29                   | 80.6             | -0.47        | 2.17                   |
| 058°37.5'E  | 00°42.47'S        | 00°47.19'S        | 06:23:44                   | 03°53.38'S        | 03°58.88'S        | 06:19:55                   | 80.3             | -0.47        | 2.17                   |
| 058°45.0'E  | 00°41.10'S        | 00°45.89'S        | 06:24:12                   | 03°52.15'S        | 03°57.59'S        | 06:20:22                   | 80.1             | -0.47        | 2.18                   |
| 058°52.5'E  | 00°39.92'S        | 00°44.55'S        | 06:24:41                   | 03°50.90'S        | 03°56.25'S        | 06:20:48                   | 79.9             | -0.48        | 2.18                   |
| 059°00.0'E  | 00°38.47'S        | 00°43.18'S        | 06:25:09                   | 03°49.63'S        | 03°55.03'S        | 06:21:14                   | 79.6             | -0.48        | 2.18                   |
| 059°07.5'E  | 00°36.97'S        | 00°41.77'S        | 06:25:37                   | 03°48.32'S        | 03°53.87'S        | 06:21:41                   | 79.4             | -0.48        | 2.18                   |
| 059°15.0'E  | 00°35.44'S        | 00°40.32'S        | 06:26:06                   | 03°46.98'S        | 03°52.52'S        | 06:22:08                   | 79.1             | -0.48        | 2.18                   |
| 059°22.5'E  | 00°33.88'S        | 00°38.83'S        | 06:26:35                   | 03°45.62'S        | 03°51.08'S        | 06:22:34                   | 78.9             | -0.48        | 2.18                   |
| 059°30.0'E  | 00°32.28'S        | 00°37.31'S        | 06:27:03                   | 03°44.23'S        | 03°49.67'S        | 06:23:01                   | 78.7             | -0.48        | 2.18                   |
| 059°37.5'E  | 00°30.65'S        | 00°35.75'S        | 06:27:32                   | 03°42.82'S        | 03°48.44'S        | 06:23:28                   | 78.4             | -0.48        | 2.18                   |
| 059°45.0'E  | 00°28.98'S        | 00°34.15'S        | 06:28:01                   | 03°41.38'S        | 03°47.01'S        | 06:23:55                   | 78.2             | -0.48        | 2.18                   |
| 059°52.5'E  | 00°27.28'S        | 00°32.51'S        | 06:28:31                   | 03°39.91'S        | 03°45.46'S        | 06:24:23                   | 77.9             | -0.48        | 2.18                   |
| 060°00.0'E  | 00°25.54'S        | 00°30.83'S        | 06:29:00                   | 03°38.42'S        | 03°43.88'S        | 06:24:50                   | 77.7             | -0.48        | 2.18                   |
| 060°07.5'E  | 00°23.77'S        | 00°29.11'S        | 06:29:29                   | 03°36.89'S        | 03°42.33'S        | 06:25:17                   | 77.5             | -0.48        | 2.18                   |
| 060°15.0'E  | 00°21.96'S        | 00°27.36'S        | 06:29:59                   | 03°35.34'S        | 03°41.14'S        | 06:25:45                   | 77.2             | -0.48        | 2.18                   |
| 060°22.5'E  | 00°20.12'S        | 00°25.56'S        | 06:30:28                   | 03°33.76'S        | 03°39.71'S        | 06:26:13                   | 77.0             | -0.48        | 2.18                   |
| 060°30.0'E  | 00°18.24'S        | 00°23.73'S        | 06:30:58                   | 03°32.16'S        | 03°38.00'S        | 06:26:40                   | 76.7             | -0.48        | 2.18                   |
| 060°37.5'E  | 00°16.32'S        | 00°21.89'S        | 06:31:28                   | 03°30.45'S        | 03°36.26'S        | 06:27:08                   | 76.5             | -0.48        | 2.18                   |
| 060°45.0'E  | 00°14.37'S        | 00°20.01'S        | 06:31:58                   | 03°28.63'S        | 03°34.49'S        | 06:27:36                   | 76.2             | -0.48        | 2.18                   |
| 060°52.5'E  | 00°12.38'S        | 00°18.10'S        | 06:32:28                   | 03°26.77'S        | 03°32.66'S        | 06:28:04                   | 76.0             | -0.48        | 2.18                   |
| 061°00.0'E  | 00°10.36'S        | 00°16.14'S        | 06:32:58                   | 03°24.90'S        | 03°30.80'S        | 06:28:33                   | 75.8             | -0.48        | 2.18                   |
| 061°07.5'E  | 00°08.29'S        | 00°14.14'S        | 06:33:28                   | 03°22.99'S        | 03°28.91'S        | 06:29:01                   | 75.5             | -0.48        | 2.18                   |
| 061°15.0'E  | 00°06.20'S        | 00°12.11'S        | 06:33:59                   | 03°21.05'S        | 03°26.99'S        | 06:29:29                   | 75.3             | -0.48        | 2.18                   |
| 061°22.5'E  | 00°04.06'S        | 00°10.03'S        | 06:34:29                   | 03°19.08'S        | 03°25.04'S        | 06:29:58                   | 75.0             | -0.48        | 2.18                   |
| 061°30.0'E  | 00°01.87'S        | 00°07.91'S        | 06:35:00                   | 03°17.08'S        | 03°23.05'S        | 06:30:27                   | 74.8             | -0.48        | 2.18                   |
| 061°37.5'E  | 00°00.30'N        | 00°05.75'S        | 06:35:31                   | 03°15.05'S        | 03°21.02'S        | 06:30:55                   | 74.5             | -0.48        | 2.18                   |
| 061°45.0'E  | 00°02.19'N        | 00°03.55'S        | 06:36:02                   | 03°13.00'S        | 03°18.97'S        | 06:31:24                   | 74.3             | -0.48        | 2.18                   |
| 061°52.5'E  | 00°04.46'N        | 00°01.30'S        | 06:36:33                   | 03°10.91'S        | 03°16.88'S        | 06:31:53                   | 74.0             | -0.48        | 2.18                   |
| 062°00.0'E  | 00°06.77'N        | 00°00.98'N        | 06:37:04                   | 03°08.79'S        | 03°14.76'S        | 06:32:22                   | 73.8             | -0.48        | 2.18                   |
| 062°07.5'E  | 00°09.12'N        | 00°03.31'N        | 06:37:35                   | 03°06.64'S        | 03°12.60'S        | 06:32:51                   | 73.5             | -0.48        | 2.18                   |
| 062°15.0'E  | 00°11.50'N        | 00°05.68'N        | 06:38:06                   | 03°04.47'S        | 03°10.41'S        | 06:33:21                   | 73.2             | -0.48        | 2.18                   |
| 062°22.5'E  | 00°13.92'N        | 00°08.09'N        | 06:38:38                   | 03°02.26'S        | 03°08.18'S        | 06:33:50                   | 73.0             | -0.48        | 2.18                   |
| 062°30.0'E  | 00°16.38'N        | 00°10.54'N        | 06:39:09                   | 03°00.02'S        | 03°05.92'S        | 06:34:20                   | 72.7             | -0.48        | 2.18                   |
| 062°37.5'E  | 00°18.88'N        | 00°13.04'N        | 06:39:41                   | 02°57.75'S        | 03°03.68'S        | 06:34:49                   | 72.5             | -0.48        | 2.18                   |
| 062°45.0'E  | 00°21.41'N        | 00°15.58'N        | 06:40:13                   | 02°55.45'S        | 03°01.36'S        | 06:35:19                   | 72.2             | -0.48        | 2.18                   |
| 062°52.5'E  | 00°23.99'N        | 00°18.16'N        | 06:40:44                   | 02°53.12'S        | 02°58.99'S        | 06:35:49                   | 72.0             | -0.48        | 2.18                   |
| 063°00.0'E  | 00°26.60'N        | 00°20.78'N        | 06:41:16                   | 02°50.76'S        | 02°56.58'S        | 06:36:19                   | 71.7             | -0.48        | 2.18                   |
| 063°07.5'E  | 00°29.25'N        | 00°23.45'N        | 06:41:48                   | 02°48.37'S        | 02°54.15'S        | 06:36:49                   | 71.5             | -0.48        | 2.18                   |
| 063°15.0'E  | 00°31.95'N        | 00°26.16'N        | 06:42:21                   | 02°45.94'S        | 02°51.67'S        | 06:37:19                   | 71.2             | -0.48        | 2.18                   |
| 063°22.5'E  | 00°34.68'N        | 00°28.91'N        | 06:42:53                   | 02°43.49'S        | 02°49.17'S        | 06:37:49                   | 71.0             | -0.48        | 2.18                   |
| 063°30.0'E  | 00°37.45'N        | 00°31.72'N        | 06:43:25                   | 02°41.00'S        | 02°46.62'S        | 06:38:19                   | 70.7             | -0.47        | 2.18                   |
| 063°37.5'E  | 00°40.26'N        | 00°34.52'N        | 06:43:58                   | 02°38.48'S        | 02°44.04'S        | 06:38:50                   | 70.5             | -0.47        | 2.17                   |
| 063°45.0'E  | 00°43.10'N        | 00°37.23'N        | 06:44:30                   | 02°35.94'S        | 02°41.43'S        | 06:39:20                   | 70.2             | -0.47        | 2.17                   |
| 063°52.5'E  | 00°45.99'N        | 00°39.94'N        | 06:45:03                   | 02°33.36'S        | 02°38.78'S        | 06:39:51                   | 70.0             | -0.47        | 2.17                   |
| 064°00.0'E  | 00°48.92'N        | 00°42.70'N        | 06:45:36                   | 02°30.74'S        | 02°36.10'S        | 06:40:22                   | 69.7             | -0.47        | 2.17                   |



# ANNULAR SOLAR ECLIPSE OF 2010 JANUARY 15

## TABLE 2.D – MAPPING COORDINATES FOR THE ZONES OF GRAZING ECLIPSE (EXTENDED)

| $\Delta T = 66.0 \text{ s}$ |                   |                   |                            |                   |                   |                            |                  |              |                        |
|-----------------------------|-------------------|-------------------|----------------------------|-------------------|-------------------|----------------------------|------------------|--------------|------------------------|
| Longitude                   | North Graze Zone  |                   | Northern                   | South Graze Zone  |                   | Southern                   | Path<br>Azm<br>° | Elev<br>Fact | Scale<br>Fact<br>km/'' |
|                             | Latitudes         |                   | Limit                      | Latitudes         |                   | Limit                      |                  |              |                        |
|                             | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s |                  |              |                        |
| 064°07.5'E                  | 00°51.89'N        | 00°45.48'N        | 06:46:08                   | 02°28.10'S        | 02°33.39'S        | 06:40:52                   | 69.5             | -0.47        | 2.17                   |
| 064°15.0'E                  | 00°54.89'N        | 00°48.32'N        | 06:46:41                   | 02°25.43'S        | 02°30.64'S        | 06:41:23                   | 69.2             | -0.47        | 2.17                   |
| 064°22.5'E                  | 00°57.94'N        | 00°51.21'N        | 06:47:14                   | 02°22.72'S        | 02°27.85'S        | 06:41:54                   | 69.0             | -0.47        | 2.17                   |
| 064°30.0'E                  | 01°01.02'N        | 00°54.13'N        | 06:47:48                   | 02°19.98'S        | 02°25.02'S        | 06:42:25                   | 68.7             | -0.47        | 2.17                   |
| 064°37.5'E                  | 01°04.15'N        | 00°57.11'N        | 06:48:21                   | 02°17.22'S        | 02°22.29'S        | 06:42:57                   | 68.4             | -0.47        | 2.17                   |
| 064°45.0'E                  | 01°07.32'N        | 01°00.12'N        | 06:48:54                   | 02°14.35'S        | 02°19.51'S        | 06:43:28                   | 68.2             | -0.47        | 2.17                   |
| 064°52.5'E                  | 01°10.52'N        | 01°03.18'N        | 06:49:27                   | 02°11.37'S        | 02°16.54'S        | 06:43:59                   | 68.0             | -0.47        | 2.17                   |
| 065°00.0'E                  | 01°13.77'N        | 01°06.29'N        | 06:50:01                   | 02°08.37'S        | 02°13.57'S        | 06:44:31                   | 67.7             | -0.47        | 2.17                   |
| 065°07.5'E                  | 01°17.06'N        | 01°09.44'N        | 06:50:34                   | 02°05.34'S        | 02°10.55'S        | 06:45:02                   | 67.4             | -0.47        | 2.17                   |
| 065°15.0'E                  | 01°20.38'N        | 01°12.63'N        | 06:51:08                   | 02°02.28'S        | 02°07.50'S        | 06:45:34                   | 67.2             | -0.46        | 2.17                   |
| 065°22.5'E                  | 01°23.75'N        | 01°15.87'N        | 06:51:42                   | 01°59.19'S        | 02°04.45'S        | 06:46:06                   | 67.0             | -0.46        | 2.17                   |
| 065°30.0'E                  | 01°27.16'N        | 01°19.15'N        | 06:52:16                   | 01°56.06'S        | 02°01.32'S        | 06:46:38                   | 66.7             | -0.46        | 2.17                   |
| 065°37.5'E                  | 01°30.61'N        | 01°22.48'N        | 06:52:49                   | 01°52.90'S        | 01°58.16'S        | 06:47:10                   | 66.5             | -0.46        | 2.16                   |
| 065°45.0'E                  | 01°34.09'N        | 01°25.85'N        | 06:53:23                   | 01°49.70'S        | 01°54.96'S        | 06:47:42                   | 66.2             | -0.46        | 2.16                   |
| 065°52.5'E                  | 01°37.62'N        | 01°29.26'N        | 06:53:57                   | 01°46.47'S        | 01°51.71'S        | 06:48:14                   | 66.0             | -0.46        | 2.16                   |
| 066°00.0'E                  | 01°41.19'N        | 01°32.72'N        | 06:54:32                   | 01°43.21'S        | 01°48.78'S        | 06:48:46                   | 65.7             | -0.46        | 2.16                   |
| 066°07.5'E                  | 01°44.80'N        | 01°36.22'N        | 06:55:06                   | 01°39.91'S        | 01°45.49'S        | 06:49:18                   | 65.5             | -0.46        | 2.16                   |
| 066°15.0'E                  | 01°48.45'N        | 01°39.77'N        | 06:55:40                   | 01°36.59'S        | 01°42.52'S        | 06:49:51                   | 65.2             | -0.46        | 2.16                   |
| 066°22.5'E                  | 01°52.13'N        | 01°43.36'N        | 06:56:14                   | 01°33.22'S        | 01°39.27'S        | 06:50:23                   | 65.0             | -0.46        | 2.16                   |
| 066°30.0'E                  | 01°55.23'N        | 01°47.00'N        | 06:56:49                   | 01°29.83'S        | 01°35.81'S        | 06:50:56                   | 64.7             | -0.45        | 2.16                   |
| 066°37.5'E                  | 01°58.97'N        | 01°50.68'N        | 06:57:23                   | 01°26.40'S        | 01°32.35'S        | 06:51:28                   | 64.5             | -0.45        | 2.16                   |
| 066°45.0'E                  | 02°01.77'N        | 01°54.40'N        | 06:57:58                   | 01°22.93'S        | 01°28.85'S        | 06:52:01                   | 64.3             | -0.45        | 2.16                   |
| 066°52.5'E                  | 02°05.63'N        | 01°58.17'N        | 06:58:32                   | 01°19.43'S        | 01°25.31'S        | 06:52:34                   | 64.0             | -0.45        | 2.16                   |
| 067°00.0'E                  | 02°09.51'N        | 02°01.98'N        | 06:59:07                   | 01°15.89'S        | 01°21.74'S        | 06:53:07                   | 63.8             | -0.45        | 2.15                   |
| 067°07.5'E                  | 02°13.43'N        | 02°05.84'N        | 06:59:42                   | 01°12.32'S        | 01°18.13'S        | 06:53:40                   | 63.5             | -0.45        | 2.15                   |
| 067°15.0'E                  | 02°17.39'N        | 02°09.74'N        | 07:00:17                   | 01°08.72'S        | 01°14.48'S        | 06:54:13                   | 63.3             | -0.45        | 2.15                   |
| 067°22.5'E                  | 02°21.39'N        | 02°13.66'N        | 07:00:51                   | 01°05.08'S        | 01°10.80'S        | 06:54:46                   | 63.1             | -0.45        | 2.15                   |
| 067°30.0'E                  | 02°25.43'N        | 02°17.58'N        | 07:01:26                   | 01°01.41'S        | 01°07.07'S        | 06:55:19                   | 62.8             | -0.44        | 2.15                   |
| 067°37.5'E                  | 02°29.51'N        | 02°21.54'N        | 07:02:01                   | 00°57.71'S        | 01°03.31'S        | 06:55:52                   | 62.6             | -0.44        | 2.15                   |
| 067°45.0'E                  | 02°33.63'N        | 02°25.55'N        | 07:02:36                   | 00°53.98'S        | 00°59.52'S        | 06:56:25                   | 62.4             | -0.44        | 2.15                   |
| 067°52.5'E                  | 02°37.79'N        | 02°29.59'N        | 07:03:11                   | 00°50.21'S        | 00°55.68'S        | 06:56:59                   | 62.1             | -0.44        | 2.15                   |
| 068°00.0'E                  | 02°41.99'N        | 02°33.69'N        | 07:03:46                   | 00°46.40'S        | 00°51.81'S        | 06:57:32                   | 61.9             | -0.44        | 2.15                   |
| 068°07.5'E                  | 02°46.23'N        | 02°37.82'N        | 07:04:21                   | 00°42.57'S        | 00°47.90'S        | 06:58:06                   | 61.7             | -0.44        | 2.14                   |
| 068°15.0'E                  | 02°50.51'N        | 02°42.00'N        | 07:04:57                   | 00°38.69'S        | 00°43.98'S        | 06:58:39                   | 61.5             | -0.44        | 2.14                   |
| 068°22.5'E                  | 02°54.85'N        | 02°46.22'N        | 07:05:32                   | 00°34.79'S        | 00°40.05'S        | 06:59:13                   | 61.2             | -0.43        | 2.14                   |
| 068°30.0'E                  | 02°59.06'N        | 02°50.49'N        | 07:06:07                   | 00°30.85'S        | 00°36.03'S        | 06:59:46                   | 61.0             | -0.43        | 2.14                   |
| 068°37.5'E                  | 03°03.13'N        | 02°54.80'N        | 07:06:42                   | 00°26.88'S        | 00°31.97'S        | 07:00:20                   | 60.8             | -0.43        | 2.14                   |
| 068°45.0'E                  | 03°07.49'N        | 02°59.15'N        | 07:07:18                   | 00°22.87'S        | 00°27.92'S        | 07:00:54                   | 60.6             | -0.43        | 2.14                   |
| 068°52.5'E                  | 03°11.73'N        | 03°03.54'N        | 07:07:53                   | 00°18.82'S        | 00°24.12'S        | 07:01:28                   | 60.3             | -0.43        | 2.14                   |
| 069°00.0'E                  | 03°16.25'N        | 03°07.97'N        | 07:08:28                   | 00°14.74'S        | 00°19.95'S        | 07:02:02                   | 60.1             | -0.43        | 2.14                   |
| 069°07.5'E                  | 03°20.82'N        | 03°12.45'N        | 07:09:04                   | 00°10.63'S        | 00°15.86'S        | 07:02:36                   | 59.9             | -0.42        | 2.13                   |
| 069°15.0'E                  | 03°25.44'N        | 03°16.98'N        | 07:09:39                   | 00°06.46'S        | 00°11.63'S        | 07:03:10                   | 59.7             | -0.42        | 2.13                   |
| 069°22.5'E                  | 03°30.05'N        | 03°21.54'N        | 07:10:15                   | 00°02.18'S        | 00°07.50'S        | 07:03:44                   | 59.5             | -0.42        | 2.13                   |
| 069°30.0'E                  | 03°34.70'N        | 03°26.14'N        | 07:10:50                   | 00°02.13'N        | 00°03.17'S        | 07:04:18                   | 59.3             | -0.42        | 2.13                   |
| 069°37.5'E                  | 03°39.38'N        | 03°30.78'N        | 07:11:26                   | 00°06.47'N        | 00°01.18'N        | 07:04:52                   | 59.1             | -0.42        | 2.13                   |
| 069°45.0'E                  | 03°44.11'N        | 03°35.46'N        | 07:12:01                   | 00°10.84'N        | 00°05.53'N        | 07:05:26                   | 58.9             | -0.41        | 2.13                   |
| 069°52.5'E                  | 03°48.87'N        | 03°40.18'N        | 07:12:37                   | 00°15.25'N        | 00°09.61'N        | 07:06:01                   | 58.7             | -0.41        | 2.13                   |
| 070°00.0'E                  | 03°53.67'N        | 03°44.94'N        | 07:13:12                   | 00°19.69'N        | 00°14.09'N        | 07:06:35                   | 58.5             | -0.41        | 2.12                   |

## ANNULAR SOLAR ECLIPSE OF 2010 JANUARY 15

### TABLE 2.D – MAPPING COORDINATES FOR THE ZONES OF GRAZING ECLIPSE (EXTENDED)

| $\Delta T = 66.0 \text{ s}$ |                   |                   |                            |                   |                   |                            |                  |              |                        |
|-----------------------------|-------------------|-------------------|----------------------------|-------------------|-------------------|----------------------------|------------------|--------------|------------------------|
| Longitude                   | North Graze Zone  |                   | Northern                   | South Graze Zone  |                   | Southern                   | Path<br>Azm<br>° | Elev<br>Fact | Scale<br>Fact<br>km/'' |
|                             | Latitudes         |                   | Limit                      | Latitudes         |                   | Limit                      |                  |              |                        |
|                             | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s |                  |              |                        |
| 070°07.5'E                  | 03°58.51'N        | 03°49.74'N        | 07:13:48                   | 00°24.16'N        | 00°18.60'N        | 07:07:09                   | 58.2             | -0.41        | 2.12                   |
| 070°15.0'E                  | 04°03.38'N        | 03°54.58'N        | 07:14:24                   | 00°28.66'N        | 00°23.10'N        | 07:07:44                   | 58.0             | -0.41        | 2.12                   |
| 070°22.5'E                  | 04°08.29'N        | 03°59.46'N        | 07:14:59                   | 00°33.20'N        | 00°27.44'N        | 07:08:18                   | 57.8             | -0.41        | 2.12                   |
| 070°30.0'E                  | 04°13.23'N        | 04°04.38'N        | 07:15:35                   | 00°37.77'N        | 00°32.05'N        | 07:08:53                   | 57.6             | -0.40        | 2.12                   |
| 070°37.5'E                  | 04°18.21'N        | 04°09.34'N        | 07:16:10                   | 00°42.31'N        | 00°36.63'N        | 07:09:27                   | 57.4             | -0.40        | 2.12                   |
| 070°45.0'E                  | 04°23.23'N        | 04°14.33'N        | 07:16:46                   | 00°46.95'N        | 00°41.27'N        | 07:10:02                   | 57.3             | -0.40        | 2.12                   |
| 070°52.5'E                  | 04°28.28'N        | 04°19.37'N        | 07:17:21                   | 00°51.62'N        | 00°45.74'N        | 07:10:36                   | 57.1             | -0.40        | 2.12                   |
| 071°00.0'E                  | 04°33.37'N        | 04°24.44'N        | 07:17:57                   | 00°56.32'N        | 00°50.49'N        | 07:11:11                   | 56.9             | -0.40        | 2.11                   |
| 071°07.5'E                  | 04°38.49'N        | 04°29.55'N        | 07:18:33                   | 01°01.07'N        | 00°55.15'N        | 07:11:45                   | 56.7             | -0.39        | 2.11                   |
| 071°15.0'E                  | 04°43.64'N        | 04°34.69'N        | 07:19:08                   | 01°05.88'N        | 00°59.99'N        | 07:12:20                   | 56.5             | -0.39        | 2.11                   |
| 071°22.5'E                  | 04°48.83'N        | 04°39.87'N        | 07:19:44                   | 01°10.73'N        | 01°04.80'N        | 07:12:55                   | 56.3             | -0.39        | 2.11                   |
| 071°30.0'E                  | 04°54.06'N        | 04°45.09'N        | 07:20:19                   | 01°15.60'N        | 01°09.48'N        | 07:13:29                   | 56.1             | -0.39        | 2.11                   |
| 071°37.5'E                  | 04°59.31'N        | 04°50.34'N        | 07:20:55                   | 01°20.50'N        | 01°14.41'N        | 07:14:04                   | 55.9             | -0.39        | 2.11                   |
| 071°45.0'E                  | 05°04.60'N        | 04°55.63'N        | 07:21:30                   | 01°25.43'N        | 01°19.36'N        | 07:14:39                   | 55.8             | -0.38        | 2.11                   |
| 071°52.5'E                  | 05°09.92'N        | 05°00.95'N        | 07:22:06                   | 01°30.40'N        | 01°24.34'N        | 07:15:13                   | 55.6             | -0.38        | 2.10                   |
| 072°00.0'E                  | 05°15.28'N        | 05°06.31'N        | 07:22:41                   | 01°35.39'N        | 01°29.33'N        | 07:15:48                   | 55.4             | -0.38        | 2.10                   |
| 072°07.5'E                  | 05°20.66'N        | 05°11.70'N        | 07:23:16                   | 01°40.42'N        | 01°34.39'N        | 07:16:23                   | 55.2             | -0.38        | 2.10                   |
| 072°15.0'E                  | 05°26.08'N        | 05°17.13'N        | 07:23:52                   | 01°45.47'N        | 01°39.47'N        | 07:16:58                   | 55.1             | -0.38        | 2.10                   |
| 072°22.5'E                  | 05°31.53'N        | 05°22.59'N        | 07:24:27                   | 01°50.56'N        | 01°44.59'N        | 07:17:32                   | 54.9             | -0.37        | 2.10                   |
| 072°30.0'E                  | 05°37.01'N        | 05°28.08'N        | 07:25:03                   | 01°55.68'N        | 01°49.74'N        | 07:18:07                   | 54.7             | -0.37        | 2.10                   |
| 072°37.5'E                  | 05°42.52'N        | 05°33.60'N        | 07:25:38                   | 02°00.82'N        | 01°54.92'N        | 07:18:42                   | 54.6             | -0.37        | 2.10                   |
| 072°45.0'E                  | 05°48.07'N        | 05°39.16'N        | 07:26:13                   | 02°06.00'N        | 02°00.13'N        | 07:19:17                   | 54.4             | -0.37        | 2.09                   |
| 072°52.5'E                  | 05°53.64'N        | 05°44.74'N        | 07:26:48                   | 02°11.20'N        | 02°05.37'N        | 07:19:51                   | 54.3             | -0.37        | 2.09                   |
| 073°00.0'E                  | 05°59.24'N        | 05°50.35'N        | 07:27:23                   | 02°16.44'N        | 02°10.65'N        | 07:20:26                   | 54.1             | -0.36        | 2.09                   |
| 073°07.5'E                  | 06°04.87'N        | 05°55.97'N        | 07:27:58                   | 02°21.70'N        | 02°15.95'N        | 07:21:01                   | 53.9             | -0.36        | 2.09                   |
| 073°15.0'E                  | 06°10.53'N        | 06°01.61'N        | 07:28:33                   | 02°26.99'N        | 02°21.29'N        | 07:21:35                   | 53.8             | -0.36        | 2.09                   |
| 073°22.5'E                  | 06°16.21'N        | 06°07.28'N        | 07:29:08                   | 02°32.31'N        | 02°26.66'N        | 07:22:10                   | 53.6             | -0.36        | 2.09                   |
| 073°30.0'E                  | 06°21.93'N        | 06°12.98'N        | 07:29:43                   | 02°37.67'N        | 02°32.05'N        | 07:22:45                   | 53.5             | -0.36        | 2.09                   |
| 073°37.5'E                  | 06°27.67'N        | 06°18.71'N        | 07:30:18                   | 02°43.06'N        | 02°37.47'N        | 07:23:19                   | 53.3             | -0.35        | 2.08                   |
| 073°45.0'E                  | 06°33.44'N        | 06°24.46'N        | 07:30:53                   | 02°48.48'N        | 02°42.93'N        | 07:23:54                   | 53.2             | -0.35        | 2.08                   |
| 073°52.5'E                  | 06°39.22'N        | 06°30.22'N        | 07:31:28                   | 02°53.93'N        | 02°48.38'N        | 07:24:29                   | 53.1             | -0.35        | 2.08                   |
| 074°00.0'E                  | 06°45.06'N        | 06°36.00'N        | 07:32:02                   | 02°59.40'N        | 02°53.86'N        | 07:25:03                   | 52.9             | -0.35        | 2.08                   |
| 074°07.5'E                  | 06°50.91'N        | 06°41.81'N        | 07:32:37                   | 03°04.90'N        | 02°59.41'N        | 07:25:38                   | 52.8             | -0.34        | 2.08                   |
| 074°15.0'E                  | 06°56.89'N        | 06°47.72'N        | 07:33:12                   | 03°10.43'N        | 03°04.98'N        | 07:26:12                   | 52.7             | -0.34        | 2.08                   |
| 074°22.5'E                  | 07°02.78'N        | 06°53.53'N        | 07:33:46                   | 03°15.99'N        | 03°10.57'N        | 07:26:47                   | 52.5             | -0.34        | 2.08                   |
| 074°30.0'E                  | 07°08.71'N        | 06°59.37'N        | 07:34:20                   | 03°21.59'N        | 03°16.19'N        | 07:27:21                   | 52.4             | -0.34        | 2.07                   |
| 074°37.5'E                  | 07°14.65'N        | 07°05.24'N        | 07:34:55                   | 03°27.21'N        | 03°21.84'N        | 07:27:56                   | 52.3             | -0.34        | 2.07                   |
| 074°45.0'E                  | 07°20.62'N        | 07°11.13'N        | 07:35:29                   | 03°32.86'N        | 03°27.52'N        | 07:28:30                   | 52.1             | -0.33        | 2.07                   |
| 074°52.5'E                  | 07°26.63'N        | 07°17.05'N        | 07:36:03                   | 03°38.54'N        | 03°33.23'N        | 07:29:04                   | 52.0             | -0.33        | 2.07                   |
| 075°00.0'E                  | 07°32.55'N        | 07°23.00'N        | 07:36:37                   | 03°44.24'N        | 03°38.84'N        | 07:29:39                   | 51.9             | -0.33        | 2.07                   |
| 075°07.5'E                  | 07°38.26'N        | 07°28.96'N        | 07:37:11                   | 03°49.96'N        | 03°44.54'N        | 07:30:13                   | 51.8             | -0.33        | 2.07                   |
| 075°15.0'E                  | 07°44.35'N        | 07°34.96'N        | 07:37:45                   | 03°55.71'N        | 03°50.32'N        | 07:30:47                   | 51.7             | -0.33        | 2.07                   |
| 075°22.5'E                  | 07°50.43'N        | 07°40.97'N        | 07:38:19                   | 04°01.48'N        | 03°56.12'N        | 07:31:21                   | 51.5             | -0.32        | 2.07                   |
| 075°30.0'E                  | 07°56.53'N        | 07°47.01'N        | 07:38:53                   | 04°07.27'N        | 04°01.95'N        | 07:31:55                   | 51.4             | -0.32        | 2.06                   |
| 075°37.5'E                  | 08°02.65'N        | 07°53.07'N        | 07:39:26                   | 04°13.10'N        | 04°07.81'N        | 07:32:29                   | 51.3             | -0.32        | 2.06                   |
| 075°45.0'E                  | 08°08.79'N        | 07°59.15'N        | 07:40:00                   | 04°18.99'N        | 04°13.57'N        | 07:33:03                   | 51.2             | -0.32        | 2.06                   |
| 075°52.5'E                  | 08°14.94'N        | 08°05.25'N        | 07:40:33                   | 04°24.87'N        | 04°19.44'N        | 07:33:37                   | 51.1             | -0.32        | 2.06                   |
| 076°00.0'E                  | 08°21.16'N        | 08°11.37'N        | 07:41:07                   | 04°30.77'N        | 04°25.36'N        | 07:34:11                   | 51.0             | -0.31        | 2.06                   |

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### TABLE 2.D – MAPPING COORDINATES FOR THE ZONES OF GRAZING ECLIPSE (EXTENDED)

| $\Delta T = 66.0 \text{ s}$ |                   |                   |                            |                   |                   |                            |                  |              |                        |
|-----------------------------|-------------------|-------------------|----------------------------|-------------------|-------------------|----------------------------|------------------|--------------|------------------------|
| Longitude                   | North Graze Zone  |                   | Northern                   | South Graze Zone  |                   | Southern                   | Path<br>Azm<br>° | Elev<br>Fact | Scale<br>Fact<br>km/'' |
|                             | Latitudes         |                   | Limit                      | Latitudes         |                   | Limit                      |                  |              |                        |
|                             | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s |                  |              |                        |
| 076°07.5'E                  | 08°27.14'N        | 08°17.51'N        | 07:41:40                   | 04°36.68'N        | 04°31.30'N        | 07:34:45                   | 50.9             | -0.31        | 2.06                   |
| 076°15.0'E                  | 08°33.09'N        | 08°23.67'N        | 07:42:13                   | 04°42.62'N        | 04°37.26'N        | 07:35:19                   | 50.8             | -0.31        | 2.06                   |
| 076°22.5'E                  | 08°39.37'N        | 08°29.85'N        | 07:42:46                   | 04°48.58'N        | 04°43.24'N        | 07:35:52                   | 50.7             | -0.31        | 2.06                   |
| 076°30.0'E                  | 08°45.61'N        | 08°36.05'N        | 07:43:19                   | 04°54.56'N        | 04°49.24'N        | 07:36:26                   | 50.6             | -0.31        | 2.05                   |
| 076°37.5'E                  | 08°51.87'N        | 08°42.27'N        | 07:43:52                   | 05°00.56'N        | 04°55.26'N        | 07:36:59                   | 50.5             | -0.30        | 2.05                   |
| 076°45.0'E                  | 08°58.20'N        | 08°48.51'N        | 07:44:24                   | 05°06.57'N        | 05°01.31'N        | 07:37:33                   | 50.4             | -0.30        | 2.05                   |
| 076°52.5'E                  | 09°04.17'N        | 08°54.76'N        | 07:44:57                   | 05°12.61'N        | 05°07.37'N        | 07:38:06                   | 50.3             | -0.30        | 2.05                   |
| 077°00.0'E                  | 09°10.20'N        | 09°01.03'N        | 07:45:29                   | 05°18.67'N        | 05°13.41'N        | 07:38:39                   | 50.3             | -0.30        | 2.05                   |
| 077°07.5'E                  | 09°16.58'N        | 09°07.32'N        | 07:46:02                   | 05°24.74'N        | 05°19.50'N        | 07:39:13                   | 50.2             | -0.30        | 2.05                   |
| 077°15.0'E                  | 09°22.91'N        | 09°13.62'N        | 07:46:34                   | 05°30.83'N        | 05°25.57'N        | 07:39:46                   | 50.1             | -0.29        | 2.05                   |
| 077°22.5'E                  | 09°29.26'N        | 09°19.94'N        | 07:47:06                   | 05°36.94'N        | 05°31.66'N        | 07:40:19                   | 50.0             | -0.29        | 2.05                   |
| 077°30.0'E                  | 09°35.69'N        | 09°26.27'N        | 07:47:38                   | 05°43.06'N        | 05°37.76'N        | 07:40:52                   | 49.9             | -0.29        | 2.05                   |
| 077°37.5'E                  | 09°41.67'N        | 09°32.61'N        | 07:48:10                   | 05°49.21'N        | 05°43.88'N        | 07:41:24                   | 49.9             | -0.29        | 2.04                   |
| 077°45.0'E                  | 09°47.77'N        | 09°38.98'N        | 07:48:42                   | 05°55.37'N        | 05°50.30'N        | 07:41:57                   | 49.8             | -0.29        | 2.04                   |
| 077°52.5'E                  | 09°54.23'N        | 09°45.35'N        | 07:49:13                   | 06°01.54'N        | 05°56.47'N        | 07:42:30                   | 49.7             | -0.28        | 2.04                   |
| 078°00.0'E                  | 10°00.64'N        | 09°51.74'N        | 07:49:45                   | 06°07.73'N        | 06°02.64'N        | 07:43:02                   | 49.6             | -0.28        | 2.04                   |
| 078°07.5'E                  | 10°07.07'N        | 09°58.14'N        | 07:50:16                   | 06°13.94'N        | 06°08.83'N        | 07:43:35                   | 49.6             | -0.28        | 2.04                   |
| 078°15.0'E                  | 10°13.51'N        | 10°04.55'N        | 07:50:47                   | 06°20.16'N        | 06°15.04'N        | 07:44:07                   | 49.5             | -0.28        | 2.04                   |
| 078°22.5'E                  | 10°19.95'N        | 10°10.97'N        | 07:51:18                   | 06°26.39'N        | 06°21.34'N        | 07:44:39                   | 49.5             | -0.28        | 2.04                   |
| 078°30.0'E                  | 10°26.41'N        | 10°17.40'N        | 07:51:49                   | 06°32.64'N        | 06°27.57'N        | 07:45:12                   | 49.4             | -0.27        | 2.04                   |
| 078°37.5'E                  | 10°32.86'N        | 10°23.85'N        | 07:52:20                   | 06°38.90'N        | 06°33.82'N        | 07:45:44                   | 49.3             | -0.27        | 2.04                   |
| 078°45.0'E                  | 10°39.31'N        | 10°30.30'N        | 07:52:51                   | 06°45.18'N        | 06°40.09'N        | 07:46:16                   | 49.3             | -0.27        | 2.04                   |
| 078°52.5'E                  | 10°45.80'N        | 10°36.76'N        | 07:53:21                   | 06°51.47'N        | 06°46.36'N        | 07:46:48                   | 49.2             | -0.27        | 2.04                   |
| 079°00.0'E                  | 10°52.29'N        | 10°43.23'N        | 07:53:52                   | 06°57.77'N        | 06°52.65'N        | 07:47:19                   | 49.2             | -0.27        | 2.03                   |
| 079°07.5'E                  | 10°58.79'N        | 10°49.71'N        | 07:54:22                   | 07°04.08'N        | 06°59.28'N        | 07:47:51                   | 49.1             | -0.27        | 2.03                   |
| 079°15.0'E                  | 11°05.29'N        | 10°56.20'N        | 07:54:52                   | 07°10.40'N        | 07°05.63'N        | 07:48:22                   | 49.1             | -0.26        | 2.03                   |
| 079°22.5'E                  | 11°11.80'N        | 11°02.70'N        | 07:55:22                   | 07°16.74'N        | 07°11.96'N        | 07:48:54                   | 49.0             | -0.26        | 2.03                   |
| 079°30.0'E                  | 11°18.34'N        | 11°09.19'N        | 07:55:52                   | 07°23.08'N        | 07°18.30'N        | 07:49:25                   | 49.0             | -0.26        | 2.03                   |
| 079°37.5'E                  | 11°24.89'N        | 11°15.70'N        | 07:56:22                   | 07°29.44'N        | 07°24.65'N        | 07:49:56                   | 48.9             | -0.26        | 2.03                   |
| 079°45.0'E                  | 11°31.41'N        | 11°22.21'N        | 07:56:51                   | 07°35.80'N        | 07°31.01'N        | 07:50:27                   | 48.9             | -0.26        | 2.03                   |
| 079°52.5'E                  | 11°37.95'N        | 11°28.73'N        | 07:57:21                   | 07°42.18'N        | 07°37.38'N        | 07:50:58                   | 48.9             | -0.26        | 2.03                   |
| 080°00.0'E                  | 11°44.49'N        | 11°35.26'N        | 07:57:50                   | 07°48.56'N        | 07°43.75'N        | 07:51:29                   | 48.8             | -0.25        | 2.03                   |
| 080°07.5'E                  | 11°51.03'N        | 11°41.80'N        | 07:58:19                   | 07°54.95'N        | 07°50.22'N        | 07:52:00                   | 48.8             | -0.25        | 2.03                   |
| 080°15.0'E                  | 11°57.58'N        | 11°48.33'N        | 07:58:48                   | 08°01.35'N        | 07°56.63'N        | 07:52:30                   | 48.7             | -0.25        | 2.03                   |
| 080°22.5'E                  | 12°04.13'N        | 11°54.87'N        | 07:59:17                   | 08°07.76'N        | 08°03.03'N        | 07:53:01                   | 48.7             | -0.25        | 2.03                   |
| 080°30.0'E                  | 12°10.68'N        | 12°01.42'N        | 07:59:45                   | 08°14.18'N        | 08°09.44'N        | 07:53:31                   | 48.7             | -0.25        | 2.02                   |
| 080°37.5'E                  | 12°17.24'N        | 12°07.97'N        | 08:00:14                   | 08°20.60'N        | 08°15.86'N        | 07:54:01                   | 48.6             | -0.25        | 2.02                   |
| 080°45.0'E                  | 12°23.79'N        | 12°14.52'N        | 08:00:42                   | 08°27.03'N        | 08°22.29'N        | 07:54:31                   | 48.6             | -0.24        | 2.02                   |
| 080°52.5'E                  | 12°30.36'N        | 12°21.07'N        | 08:01:10                   | 08°33.47'N        | 08°28.72'N        | 07:55:01                   | 48.6             | -0.24        | 2.02                   |
| 081°00.0'E                  | 12°36.92'N        | 12°27.63'N        | 08:01:38                   | 08°39.91'N        | 08°35.17'N        | 07:55:31                   | 48.5             | -0.24        | 2.02                   |
| 081°07.5'E                  | 12°43.48'N        | 12°34.18'N        | 08:02:06                   | 08°46.40'N        | 08°41.58'N        | 07:56:00                   | 48.5             | -0.24        | 2.02                   |
| 081°15.0'E                  | 12°50.04'N        | 12°40.74'N        | 08:02:34                   | 08°52.88'N        | 08°48.02'N        | 07:56:30                   | 48.5             | -0.24        | 2.02                   |
| 081°22.5'E                  | 12°56.61'N        | 12°47.31'N        | 08:03:02                   | 08°59.33'N        | 08°54.48'N        | 07:56:59                   | 48.5             | -0.24        | 2.02                   |
| 081°30.0'E                  | 13°03.17'N        | 12°53.87'N        | 08:03:29                   | 09°05.79'N        | 09°00.94'N        | 07:57:29                   | 48.5             | -0.23        | 2.02                   |
| 081°37.5'E                  | 13°09.73'N        | 13°00.43'N        | 08:03:56                   | 09°12.26'N        | 09°07.40'N        | 07:57:58                   | 48.4             | -0.23        | 2.02                   |
| 081°45.0'E                  | 13°16.29'N        | 13°06.99'N        | 08:04:23                   | 09°18.73'N        | 09°13.88'N        | 07:58:27                   | 48.4             | -0.23        | 2.02                   |
| 081°52.5'E                  | 13°22.86'N        | 13°13.55'N        | 08:04:50                   | 09°25.20'N        | 09°20.35'N        | 07:58:55                   | 48.4             | -0.23        | 2.02                   |
| 082°00.0'E                  | 13°29.42'N        | 13°20.11'N        | 08:05:17                   | 09°31.68'N        | 09°26.82'N        | 07:59:24                   | 48.4             | -0.23        | 2.02                   |

**ANNULAR SOLAR ECLIPSE OF 2010 JANUARY 15**

**TABLE 2.D – MAPPING COORDINATES FOR THE ZONES OF GRAZING ECLIPSE (EXTENDED)**

| Longitude  | North Graze Zone  |                   | Northern                   | South Graze Zone  |                   | Southern                   | $\Delta T = 66.0$ s  |              |                        |
|------------|-------------------|-------------------|----------------------------|-------------------|-------------------|----------------------------|----------------------|--------------|------------------------|
|            | Latitudes         |                   | Limit                      | Latitudes         |                   | Limit                      | Path<br>Azimuth<br>° | Elev<br>Fact | Scale<br>Fact<br>km/'' |
|            | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s |                      |              |                        |
| 082°07.5'E | 13°35.98'N        | 13°26.67'N        | 08:05:44                   | 09°38.15'N        | 09°33.30'N        | 07:59:53                   | 48.4                 | -0.23        | 2.02                   |
| 082°15.0'E | 13°42.53'N        | 13°33.23'N        | 08:06:10                   | 09°44.63'N        | 09°39.78'N        | 08:00:21                   | 48.4                 | -0.23        | 2.01                   |
| 082°22.5'E | 13°49.08'N        | 13°39.79'N        | 08:06:37                   | 09°51.11'N        | 09°46.26'N        | 08:00:49                   | 48.4                 | -0.22        | 2.01                   |
| 082°30.0'E | 13°55.64'N        | 13°46.34'N        | 08:07:03                   | 09°57.60'N        | 09°52.74'N        | 08:01:17                   | 48.4                 | -0.22        | 2.01                   |
| 082°37.5'E | 14°02.19'N        | 13°52.90'N        | 08:07:29                   | 10°04.08'N        | 09°59.23'N        | 08:01:45                   | 48.4                 | -0.22        | 2.01                   |
| 082°45.0'E | 14°08.73'N        | 13°59.45'N        | 08:07:55                   | 10°10.57'N        | 10°05.71'N        | 08:02:13                   | 48.4                 | -0.22        | 2.01                   |
| 082°52.5'E | 14°15.28'N        | 14°06.00'N        | 08:08:20                   | 10°17.05'N        | 10°12.20'N        | 08:02:41                   | 48.3                 | -0.22        | 2.01                   |
| 083°00.0'E | 14°21.81'N        | 14°12.54'N        | 08:08:46                   | 10°23.54'N        | 10°18.68'N        | 08:03:08                   | 48.3                 | -0.22        | 2.01                   |
| 083°07.5'E | 14°28.35'N        | 14°19.08'N        | 08:09:11                   | 10°30.02'N        | 10°25.16'N        | 08:03:36                   | 48.4                 | -0.22        | 2.01                   |
| 083°15.0'E | 14°34.88'N        | 14°25.62'N        | 08:09:37                   | 10°36.51'N        | 10°31.65'N        | 08:04:03                   | 48.4                 | -0.21        | 2.01                   |
| 083°22.5'E | 14°41.40'N        | 14°32.15'N        | 08:10:02                   | 10°42.99'N        | 10°38.13'N        | 08:04:30                   | 48.3                 | -0.21        | 2.01                   |
| 083°30.0'E | 14°47.92'N        | 14°38.68'N        | 08:10:27                   | 10°49.47'N        | 10°44.61'N        | 08:04:57                   | 48.4                 | -0.21        | 2.01                   |
| 083°37.5'E | 14°54.43'N        | 14°45.20'N        | 08:10:51                   | 10°55.95'N        | 10°51.09'N        | 08:05:24                   | 48.4                 | -0.21        | 2.01                   |
| 083°45.0'E | 15°00.94'N        | 14°51.72'N        | 08:11:16                   | 11°02.43'N        | 10°57.57'N        | 08:05:51                   | 48.4                 | -0.21        | 2.01                   |
| 083°52.5'E | 15°07.45'N        | 14°58.23'N        | 08:11:40                   | 11°08.91'N        | 11°04.05'N        | 08:06:17                   | 48.4                 | -0.21        | 2.01                   |
| 084°00.0'E | 15°13.94'N        | 15°04.74'N        | 08:12:05                   | 11°15.38'N        | 11°10.52'N        | 08:06:43                   | 48.4                 | -0.21        | 2.01                   |
| 084°07.5'E | 15°20.43'N        | 15°11.24'N        | 08:12:29                   | 11°21.85'N        | 11°16.99'N        | 08:07:10                   | 48.4                 | -0.21        | 2.01                   |
| 084°15.0'E | 15°26.92'N        | 15°17.74'N        | 08:12:53                   | 11°28.32'N        | 11°23.46'N        | 08:07:36                   | 48.4                 | -0.21        | 2.01                   |
| 084°22.5'E | 15°33.40'N        | 15°24.23'N        | 08:13:16                   | 11°34.78'N        | 11°29.92'N        | 08:08:02                   | 48.4                 | -0.20        | 2.01                   |
| 084°30.0'E | 15°39.87'N        | 15°30.71'N        | 08:13:40                   | 11°41.25'N        | 11°36.38'N        | 08:08:27                   | 48.4                 | -0.20        | 2.01                   |
| 084°37.5'E | 15°46.33'N        | 15°37.19'N        | 08:14:04                   | 11°47.70'N        | 11°42.84'N        | 08:08:53                   | 48.4                 | -0.20        | 2.01                   |
| 084°45.0'E | 15°52.79'N        | 15°43.66'N        | 08:14:27                   | 11°54.15'N        | 11°49.29'N        | 08:09:18                   | 48.4                 | -0.20        | 2.00                   |
| 084°52.5'E | 15°59.24'N        | 15°50.13'N        | 08:14:50                   | 12°00.60'N        | 11°55.74'N        | 08:09:44                   | 48.5                 | -0.20        | 2.00                   |
| 085°00.0'E | 16°05.68'N        | 15°56.58'N        | 08:15:13                   | 12°07.04'N        | 12°02.18'N        | 08:10:09                   | 48.5                 | -0.20        | 2.00                   |
| 085°07.5'E | 16°12.11'N        | 16°03.03'N        | 08:15:36                   | 12°13.48'N        | 12°08.62'N        | 08:10:34                   | 48.5                 | -0.20        | 2.00                   |
| 085°15.0'E | 16°18.57'N        | 16°09.47'N        | 08:15:59                   | 12°19.91'N        | 12°15.05'N        | 08:10:59                   | 48.5                 | -0.20        | 2.00                   |
| 085°22.5'E | 16°25.03'N        | 16°15.90'N        | 08:16:21                   | 12°26.34'N        | 12°21.48'N        | 08:11:23                   | 48.5                 | -0.20        | 2.00                   |
| 085°30.0'E | 16°31.43'N        | 16°22.33'N        | 08:16:44                   | 12°32.75'N        | 12°27.89'N        | 08:11:48                   | 48.5                 | -0.19        | 2.00                   |
| 085°37.5'E | 16°37.83'N        | 16°28.74'N        | 08:17:06                   | 12°39.17'N        | 12°34.31'N        | 08:12:12                   | 48.6                 | -0.19        | 2.00                   |
| 085°45.0'E | 16°44.22'N        | 16°35.15'N        | 08:17:28                   | 12°45.58'N        | 12°40.71'N        | 08:12:36                   | 48.6                 | -0.19        | 2.00                   |
| 085°52.5'E | 16°50.60'N        | 16°41.55'N        | 08:17:50                   | 12°51.97'N        | 12°47.11'N        | 08:13:01                   | 48.6                 | -0.19        | 2.00                   |
| 086°00.0'E | 16°56.98'N        | 16°47.94'N        | 08:18:12                   | 12°58.37'N        | 12°53.51'N        | 08:13:24                   | 48.6                 | -0.19        | 2.00                   |
| 086°07.5'E | 17°03.34'N        | 16°54.33'N        | 08:18:33                   | 13°04.76'N        | 12°59.90'N        | 08:13:48                   | 48.7                 | -0.19        | 2.00                   |
| 086°15.0'E | 17°09.69'N        | 17°00.70'N        | 08:18:55                   | 13°11.13'N        | 13°06.28'N        | 08:14:12                   | 48.7                 | -0.19        | 2.00                   |
| 086°22.5'E | 17°16.03'N        | 17°07.06'N        | 08:19:16                   | 13°17.50'N        | 13°12.65'N        | 08:14:35                   | 48.7                 | -0.19        | 2.00                   |
| 086°30.0'E | 17°22.32'N        | 17°13.42'N        | 08:19:37                   | 13°23.87'N        | 13°19.01'N        | 08:14:59                   | 48.7                 | -0.19        | 2.00                   |
| 086°37.5'E | 17°29.14'N        | 17°19.75'N        | 08:19:58                   | 13°30.22'N        | 13°25.37'N        | 08:15:22                   | 48.8                 | -0.19        | 2.00                   |
| 086°45.0'E | 17°35.77'N        | 17°26.08'N        | 08:20:19                   | 13°36.57'N        | 13°31.72'N        | 08:15:45                   | 48.8                 | -0.19        | 2.00                   |
| 086°52.5'E | 17°42.00'N        | 17°32.40'N        | 08:20:40                   | 13°42.91'N        | 13°38.06'N        | 08:16:08                   | 48.8                 | -0.18        | 2.00                   |
| 087°00.0'E | 17°48.29'N        | 17°38.72'N        | 08:21:00                   | 13°49.24'N        | 13°44.35'N        | 08:16:31                   | 48.8                 | -0.18        | 2.00                   |
| 087°07.5'E | 17°54.57'N        | 17°45.02'N        | 08:21:21                   | 13°55.56'N        | 13°50.65'N        | 08:16:53                   | 48.9                 | -0.18        | 2.00                   |
| 087°15.0'E | 18°00.84'N        | 17°51.31'N        | 08:21:41                   | 14°01.87'N        | 13°56.98'N        | 08:17:16                   | 48.9                 | -0.18        | 2.00                   |
| 087°22.5'E | 18°07.10'N        | 17°57.60'N        | 08:22:01                   | 14°08.17'N        | 14°03.28'N        | 08:17:38                   | 48.9                 | -0.18        | 2.00                   |
| 087°30.0'E | 18°13.31'N        | 18°03.87'N        | 08:22:21                   | 14°14.47'N        | 14°09.55'N        | 08:18:00                   | 49.0                 | -0.18        | 2.00                   |
| 087°37.5'E | 18°19.63'N        | 18°10.13'N        | 08:22:41                   | 14°20.75'N        | 14°15.82'N        | 08:18:22                   | 49.0                 | -0.18        | 2.00                   |
| 087°45.0'E | 18°26.22'N        | 18°16.38'N        | 08:23:00                   | 14°27.02'N        | 14°22.08'N        | 08:18:44                   | 49.0                 | -0.18        | 2.00                   |
| 087°52.5'E | 18°32.48'N        | 18°22.62'N        | 08:23:20                   | 14°33.28'N        | 14°28.32'N        | 08:19:05                   | 49.1                 | -0.18        | 2.00                   |
| 088°00.0'E | 18°38.65'N        | 18°28.85'N        | 08:23:39                   | 14°39.53'N        | 14°34.58'N        | 08:19:27                   | 49.1                 | -0.18        | 2.00                   |

## ANNULAR SOLAR ECLIPSE OF 2010 JANUARY 15

### TABLE 2.D – MAPPING COORDINATES FOR THE ZONES OF GRAZING ECLIPSE (EXTENDED)

| $\Delta T = 66.0 \text{ s}$ |                   |                   |                            |                   |                   |                            |                  |              |                        |
|-----------------------------|-------------------|-------------------|----------------------------|-------------------|-------------------|----------------------------|------------------|--------------|------------------------|
| Longitude                   | North Graze Zone  |                   | Northern                   | South Graze Zone  |                   | Southern                   | Path<br>Azm<br>° | Elev<br>Fact | Scale<br>Fact<br>km/'' |
|                             | Latitudes         |                   | Limit                      | Latitudes         |                   | Limit                      |                  |              |                        |
|                             | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s |                  |              |                        |
| 088°07.5'E                  | 18°44.84'N        | 18°35.07'N        | 08:23:58                   | 14°45.79'N        | 14°40.73'N        | 08:19:48                   | 49.1             | -0.18        | 2.00                   |
| 088°15.0'E                  | 18°51.02'N        | 18°41.27'N        | 08:24:18                   | 14°52.06'N        | 14°46.78'N        | 08:20:10                   | 49.2             | -0.18        | 2.00                   |
| 088°22.5'E                  | 18°57.18'N        | 18°47.47'N        | 08:24:36                   | 14°58.28'N        | 14°53.01'N        | 08:20:31                   | 49.2             | -0.18        | 2.00                   |
| 088°30.0'E                  | 19°03.34'N        | 18°53.65'N        | 08:24:55                   | 15°04.49'N        | 14°59.23'N        | 08:20:52                   | 49.2             | -0.18        | 2.00                   |
| 088°37.5'E                  | 19°09.44'N        | 18°59.82'N        | 08:25:14                   | 15°10.69'N        | 15°05.44'N        | 08:21:12                   | 49.3             | -0.17        | 2.00                   |
| 088°45.0'E                  | 19°15.68'N        | 19°05.98'N        | 08:25:32                   | 15°16.88'N        | 15°11.62'N        | 08:21:33                   | 49.3             | -0.17        | 2.00                   |
| 088°52.5'E                  | 19°22.10'N        | 19°12.13'N        | 08:25:51                   | 15°23.06'N        | 15°17.79'N        | 08:21:54                   | 49.4             | -0.17        | 1.99                   |
| 089°00.0'E                  | 19°28.21'N        | 19°18.26'N        | 08:26:09                   | 15°29.22'N        | 15°23.94'N        | 08:22:14                   | 49.4             | -0.17        | 1.99                   |
| 089°07.5'E                  | 19°34.28'N        | 19°24.39'N        | 08:26:27                   | 15°35.38'N        | 15°30.08'N        | 08:22:34                   | 49.4             | -0.17        | 1.99                   |
| 089°15.0'E                  | 19°40.36'N        | 19°30.50'N        | 08:26:45                   | 15°41.52'N        | 15°36.20'N        | 08:22:54                   | 49.5             | -0.17        | 1.99                   |
| 089°22.5'E                  | 19°46.42'N        | 19°36.60'N        | 08:27:03                   | 15°47.65'N        | 15°42.31'N        | 08:23:14                   | 49.5             | -0.17        | 1.99                   |
| 089°30.0'E                  | 19°52.47'N        | 19°42.68'N        | 08:27:20                   | 15°53.77'N        | 15°48.42'N        | 08:23:34                   | 49.6             | -0.17        | 1.99                   |
| 089°37.5'E                  | 19°58.53'N        | 19°48.75'N        | 08:27:38                   | 15°59.88'N        | 15°54.51'N        | 08:23:54                   | 49.6             | -0.17        | 1.99                   |
| 089°45.0'E                  | 20°04.57'N        | 19°54.81'N        | 08:27:55                   | 16°05.97'N        | 16°00.58'N        | 08:24:13                   | 49.6             | -0.17        | 1.99                   |
| 089°52.5'E                  | 20°10.58'N        | 20°00.86'N        | 08:28:13                   | 16°12.05'N        | 16°06.65'N        | 08:24:32                   | 49.7             | -0.17        | 1.99                   |
| 090°00.0'E                  | 20°16.58'N        | 20°06.89'N        | 08:28:30                   | 16°18.12'N        | 16°12.70'N        | 08:24:52                   | 49.7             | -0.17        | 1.99                   |
| 090°07.5'E                  | 20°22.56'N        | 20°12.92'N        | 08:28:47                   | 16°24.18'N        | 16°18.74'N        | 08:25:11                   | 49.8             | -0.17        | 1.99                   |
| 090°15.0'E                  | 20°28.54'N        | 20°18.92'N        | 08:29:03                   | 16°30.22'N        | 16°24.76'N        | 08:25:30                   | 49.8             | -0.17        | 1.99                   |
| 090°22.5'E                  | 20°34.48'N        | 20°24.92'N        | 08:29:20                   | 16°36.26'N        | 16°30.77'N        | 08:25:49                   | 49.9             | -0.17        | 1.99                   |
| 090°30.0'E                  | 20°40.43'N        | 20°30.91'N        | 08:29:37                   | 16°42.28'N        | 16°36.78'N        | 08:26:07                   | 49.9             | -0.17        | 1.99                   |
| 090°37.5'E                  | 20°46.64'N        | 20°36.88'N        | 08:29:53                   | 16°48.28'N        | 16°42.77'N        | 08:26:26                   | 49.9             | -0.17        | 1.99                   |
| 090°45.0'E                  | 20°52.75'N        | 20°42.84'N        | 08:30:10                   | 16°54.28'N        | 16°48.75'N        | 08:26:44                   | 50.0             | -0.17        | 1.99                   |
| 090°52.5'E                  | 20°58.62'N        | 20°48.78'N        | 08:30:26                   | 17°00.26'N        | 16°54.71'N        | 08:27:02                   | 50.1             | -0.17        | 1.99                   |
| 091°00.0'E                  | 21°04.51'N        | 20°54.71'N        | 08:30:42                   | 17°06.23'N        | 17°00.66'N        | 08:27:20                   | 50.1             | -0.17        | 1.99                   |
| 091°07.5'E                  | 21°10.39'N        | 21°00.63'N        | 08:30:58                   | 17°12.18'N        | 17°06.60'N        | 08:27:38                   | 50.1             | -0.17        | 1.99                   |
| 091°15.0'E                  | 21°16.26'N        | 21°06.54'N        | 08:31:13                   | 17°18.12'N        | 17°12.53'N        | 08:27:56                   | 50.2             | -0.16        | 1.99                   |
| 091°22.5'E                  | 21°22.11'N        | 21°12.43'N        | 08:31:29                   | 17°24.05'N        | 17°18.44'N        | 08:28:14                   | 50.2             | -0.16        | 1.99                   |
| 091°30.0'E                  | 21°27.95'N        | 21°18.30'N        | 08:31:45                   | 17°29.96'N        | 17°24.33'N        | 08:28:32                   | 50.3             | -0.16        | 1.99                   |
| 091°37.5'E                  | 21°33.77'N        | 21°24.17'N        | 08:32:00                   | 17°35.86'N        | 17°30.22'N        | 08:28:49                   | 50.3             | -0.16        | 1.99                   |
| 091°45.0'E                  | 21°39.58'N        | 21°30.02'N        | 08:32:15                   | 17°41.75'N        | 17°36.09'N        | 08:29:06                   | 50.4             | -0.16        | 1.99                   |
| 091°52.5'E                  | 21°45.38'N        | 21°35.86'N        | 08:32:30                   | 17°47.62'N        | 17°41.95'N        | 08:29:23                   | 50.4             | -0.16        | 1.99                   |
| 092°00.0'E                  | 21°51.16'N        | 21°41.69'N        | 08:32:46                   | 17°53.48'N        | 17°47.79'N        | 08:29:41                   | 50.5             | -0.16        | 1.99                   |
| 092°07.5'E                  | 21°56.93'N        | 21°47.50'N        | 08:33:00                   | 17°59.33'N        | 17°53.62'N        | 08:29:57                   | 50.5             | -0.16        | 1.99                   |
| 092°15.0'E                  | 22°02.69'N        | 21°53.30'N        | 08:33:15                   | 18°05.16'N        | 17°59.44'N        | 08:30:14                   | 50.6             | -0.16        | 1.99                   |
| 092°22.5'E                  | 22°08.43'N        | 21°59.08'N        | 08:33:30                   | 18°10.98'N        | 18°05.24'N        | 08:30:31                   | 50.6             | -0.16        | 1.99                   |
| 092°30.0'E                  | 22°14.15'N        | 22°04.85'N        | 08:33:44                   | 18°16.78'N        | 18°11.03'N        | 08:30:47                   | 50.7             | -0.16        | 1.99                   |
| 092°37.5'E                  | 22°19.87'N        | 22°10.61'N        | 08:33:59                   | 18°22.57'N        | 18°16.80'N        | 08:31:04                   | 50.7             | -0.16        | 1.99                   |
| 092°45.0'E                  | 22°25.57'N        | 22°16.36'N        | 08:34:13                   | 18°28.35'N        | 18°22.57'N        | 08:31:20                   | 50.8             | -0.16        | 1.99                   |
| 092°52.5'E                  | 22°31.25'N        | 22°22.09'N        | 08:34:27                   | 18°34.11'N        | 18°28.31'N        | 08:31:36                   | 50.8             | -0.16        | 1.99                   |
| 093°00.0'E                  | 22°36.92'N        | 22°27.81'N        | 08:34:41                   | 18°39.86'N        | 18°34.04'N        | 08:31:52                   | 50.9             | -0.16        | 1.99                   |
| 093°07.5'E                  | 22°42.58'N        | 22°33.51'N        | 08:34:55                   | 18°45.59'N        | 18°39.77'N        | 08:32:08                   | 50.9             | -0.16        | 1.99                   |
| 093°15.0'E                  | 22°48.23'N        | 22°39.20'N        | 08:35:09                   | 18°51.31'N        | 18°45.47'N        | 08:32:24                   | 51.0             | -0.16        | 1.99                   |
| 093°22.5'E                  | 22°53.85'N        | 22°44.87'N        | 08:35:23                   | 18°57.02'N        | 18°51.16'N        | 08:32:40                   | 51.0             | -0.16        | 1.99                   |
| 093°30.0'E                  | 22°59.47'N        | 22°50.48'N        | 08:35:36                   | 19°02.71'N        | 18°56.84'N        | 08:32:55                   | 51.1             | -0.16        | 1.99                   |
| 093°37.5'E                  | 23°05.07'N        | 22°56.08'N        | 08:35:50                   | 19°08.38'N        | 19°02.50'N        | 08:33:10                   | 51.1             | -0.16        | 1.99                   |
| 093°45.0'E                  | 23°10.66'N        | 23°01.65'N        | 08:36:03                   | 19°14.05'N        | 19°08.15'N        | 08:33:26                   | 51.2             | -0.16        | 1.99                   |
| 093°52.5'E                  | 23°16.23'N        | 23°07.22'N        | 08:36:16                   | 19°19.69'N        | 19°13.79'N        | 08:33:41                   | 51.2             | -0.16        | 1.99                   |
| 094°00.0'E                  | 23°21.79'N        | 23°12.77'N        | 08:36:30                   | 19°25.33'N        | 19°19.41'N        | 08:33:56                   | 51.3             | -0.16        | 1.99                   |

## ANNULAR SOLAR ECLIPSE OF 2010 JANUARY 15

### TABLE 2.D – MAPPING COORDINATES FOR THE ZONES OF GRAZING ECLIPSE (EXTENDED)

| $\Delta T = 66.0 \text{ s}$ |                   |                   |                            |                   |                   |                            |                  |              |                        |
|-----------------------------|-------------------|-------------------|----------------------------|-------------------|-------------------|----------------------------|------------------|--------------|------------------------|
| Longitude                   | North Graze Zone  |                   | Northern                   | South Graze Zone  |                   | Southern                   | Path<br>Azm<br>° | Elev<br>Fact | Scale<br>Fact<br>km/'' |
|                             | Latitudes         |                   | Limit                      | Latitudes         |                   | Limit                      |                  |              |                        |
|                             | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s |                  |              |                        |
| 094°07.5'E                  | 23°27.33'N        | 23°18.30'N        | 08:36:43                   | 19°30.95'N        | 19°25.02'N        | 08:34:11                   | 51.3             | -0.16        | 1.99                   |
| 094°15.0'E                  | 23°32.87'N        | 23°23.82'N        | 08:36:55                   | 19°36.55'N        | 19°30.61'N        | 08:34:26                   | 51.4             | -0.16        | 1.99                   |
| 094°22.5'E                  | 23°38.38'N        | 23°29.33'N        | 08:37:08                   | 19°42.14'N        | 19°36.19'N        | 08:34:40                   | 51.4             | -0.16        | 1.99                   |
| 094°30.0'E                  | 23°43.89'N        | 23°34.83'N        | 08:37:21                   | 19°47.72'N        | 19°41.75'N        | 08:34:55                   | 51.5             | -0.16        | 1.99                   |
| 094°37.5'E                  | 23°49.37'N        | 23°40.31'N        | 08:37:34                   | 19°53.28'N        | 19°47.30'N        | 08:35:09                   | 51.5             | -0.16        | 1.99                   |
| 094°45.0'E                  | 23°54.85'N        | 23°45.78'N        | 08:37:46                   | 19°58.82'N        | 19°52.84'N        | 08:35:24                   | 51.6             | -0.16        | 1.99                   |
| 094°52.5'E                  | 24°00.31'N        | 23°51.23'N        | 08:37:58                   | 20°04.36'N        | 19°58.36'N        | 08:35:38                   | 51.7             | -0.16        | 1.99                   |
| 095°00.0'E                  | 24°05.75'N        | 23°56.67'N        | 08:38:11                   | 20°09.87'N        | 20°03.87'N        | 08:35:52                   | 51.7             | -0.16        | 1.99                   |
| 095°07.5'E                  | 24°11.18'N        | 24°02.09'N        | 08:38:23                   | 20°15.38'N        | 20°09.36'N        | 08:36:06                   | 51.8             | -0.16        | 1.99                   |
| 095°15.0'E                  | 24°16.60'N        | 24°07.51'N        | 08:38:35                   | 20°20.86'N        | 20°14.84'N        | 08:36:20                   | 51.8             | -0.16        | 1.99                   |
| 095°22.5'E                  | 24°22.01'N        | 24°12.91'N        | 08:38:47                   | 20°26.34'N        | 20°20.31'N        | 08:36:33                   | 51.9             | -0.16        | 1.99                   |
| 095°30.0'E                  | 24°27.40'N        | 24°18.29'N        | 08:38:58                   | 20°31.80'N        | 20°25.76'N        | 08:36:47                   | 51.9             | -0.16        | 1.99                   |
| 095°37.5'E                  | 24°32.77'N        | 24°23.66'N        | 08:39:10                   | 20°37.24'N        | 20°31.19'N        | 08:37:01                   | 52.0             | -0.16        | 1.99                   |
| 095°45.0'E                  | 24°38.13'N        | 24°29.02'N        | 08:39:22                   | 20°42.67'N        | 20°36.62'N        | 08:37:14                   | 52.0             | -0.16        | 1.99                   |
| 095°52.5'E                  | 24°43.48'N        | 24°34.36'N        | 08:39:33                   | 20°48.09'N        | 20°42.07'N        | 08:37:27                   | 52.1             | -0.16        | 1.99                   |
| 096°00.0'E                  | 24°48.81'N        | 24°39.69'N        | 08:39:45                   | 20°53.49'N        | 20°47.49'N        | 08:37:40                   | 52.2             | -0.16        | 1.99                   |
| 096°07.5'E                  | 24°54.13'N        | 24°45.01'N        | 08:39:56                   | 20°58.87'N        | 20°52.87'N        | 08:37:53                   | 52.2             | -0.16        | 1.99                   |
| 096°15.0'E                  | 24°59.44'N        | 24°50.31'N        | 08:40:07                   | 21°04.24'N        | 20°58.23'N        | 08:38:06                   | 52.3             | -0.16        | 1.99                   |
| 096°22.5'E                  | 25°04.73'N        | 24°55.60'N        | 08:40:18                   | 21°09.60'N        | 21°03.58'N        | 08:38:19                   | 52.3             | -0.16        | 1.99                   |
| 096°30.0'E                  | 25°10.01'N        | 25°00.88'N        | 08:40:29                   | 21°14.94'N        | 21°08.92'N        | 08:38:32                   | 52.4             | -0.16        | 1.99                   |
| 096°37.5'E                  | 25°15.27'N        | 25°06.14'N        | 08:40:40                   | 21°20.27'N        | 21°14.25'N        | 08:38:45                   | 52.4             | -0.16        | 1.99                   |
| 096°45.0'E                  | 25°20.52'N        | 25°11.38'N        | 08:40:51                   | 21°25.58'N        | 21°19.55'N        | 08:38:57                   | 52.5             | -0.16        | 1.99                   |
| 096°52.5'E                  | 25°25.76'N        | 25°16.62'N        | 08:41:02                   | 21°30.88'N        | 21°24.85'N        | 08:39:10                   | 52.5             | -0.16        | 1.99                   |
| 097°00.0'E                  | 25°30.98'N        | 25°21.84'N        | 08:41:12                   | 21°36.16'N        | 21°30.13'N        | 08:39:22                   | 52.6             | -0.16        | 1.99                   |
| 097°07.5'E                  | 25°36.19'N        | 25°27.05'N        | 08:41:23                   | 21°41.45'N        | 21°35.39'N        | 08:39:34                   | 52.6             | -0.16        | 1.99                   |
| 097°15.0'E                  | 25°41.38'N        | 25°32.24'N        | 08:41:33                   | 21°46.72'N        | 21°40.65'N        | 08:39:46                   | 52.7             | -0.16        | 1.99                   |
| 097°22.5'E                  | 25°46.56'N        | 25°37.42'N        | 08:41:44                   | 21°51.98'N        | 21°45.88'N        | 08:39:58                   | 52.8             | -0.16        | 1.99                   |
| 097°30.0'E                  | 25°51.73'N        | 25°42.59'N        | 08:41:54                   | 21°57.22'N        | 21°51.11'N        | 08:40:10                   | 52.8             | -0.16        | 1.99                   |
| 097°37.5'E                  | 25°56.88'N        | 25°47.74'N        | 08:42:04                   | 22°02.45'N        | 21°56.32'N        | 08:40:22                   | 52.9             | -0.16        | 1.99                   |
| 097°45.0'E                  | 26°02.02'N        | 25°52.88'N        | 08:42:14                   | 22°07.66'N        | 22°01.51'N        | 08:40:34                   | 52.9             | -0.16        | 1.99                   |
| 097°52.5'E                  | 26°07.14'N        | 25°58.00'N        | 08:42:24                   | 22°12.86'N        | 22°06.68'N        | 08:40:45                   | 53.0             | -0.16        | 1.99                   |
| 098°00.0'E                  | 26°12.25'N        | 26°03.12'N        | 08:42:34                   | 22°18.05'N        | 22°11.90'N        | 08:40:57                   | 53.0             | -0.16        | 1.99                   |
| 098°07.5'E                  | 26°17.35'N        | 26°08.22'N        | 08:42:43                   | 22°23.22'N        | 22°17.18'N        | 08:41:08                   | 53.1             | -0.16        | 1.99                   |
| 098°15.0'E                  | 26°22.44'N        | 26°13.30'N        | 08:42:53                   | 22°28.37'N        | 22°22.34'N        | 08:41:19                   | 53.1             | -0.16        | 1.99                   |
| 098°22.5'E                  | 26°27.50'N        | 26°18.37'N        | 08:43:03                   | 22°33.51'N        | 22°27.45'N        | 08:41:31                   | 53.2             | -0.16        | 1.99                   |
| 098°30.0'E                  | 26°32.55'N        | 26°23.43'N        | 08:43:12                   | 22°38.64'N        | 22°32.56'N        | 08:41:42                   | 53.3             | -0.16        | 1.99                   |
| 098°37.5'E                  | 26°37.57'N        | 26°28.48'N        | 08:43:21                   | 22°43.75'N        | 22°37.66'N        | 08:41:53                   | 53.3             | -0.16        | 1.99                   |
| 098°45.0'E                  | 26°42.60'N        | 26°33.51'N        | 08:43:31                   | 22°48.85'N        | 22°42.74'N        | 08:42:04                   | 53.4             | -0.16        | 1.99                   |
| 098°52.5'E                  | 26°47.62'N        | 26°38.53'N        | 08:43:40                   | 22°53.93'N        | 22°47.81'N        | 08:42:14                   | 53.4             | -0.16        | 1.99                   |
| 099°00.0'E                  | 26°52.62'N        | 26°43.54'N        | 08:43:49                   | 22°59.00'N        | 22°52.87'N        | 08:42:25                   | 53.5             | -0.16        | 1.99                   |
| 099°07.5'E                  | 26°57.60'N        | 26°48.53'N        | 08:43:58                   | 23°04.06'N        | 22°57.91'N        | 08:42:36                   | 53.5             | -0.16        | 1.99                   |
| 099°15.0'E                  | 27°02.58'N        | 26°53.51'N        | 08:44:07                   | 23°09.10'N        | 23°02.94'N        | 08:42:46                   | 53.6             | -0.16        | 1.99                   |
| 099°22.5'E                  | 27°07.54'N        | 26°58.47'N        | 08:44:16                   | 23°14.13'N        | 23°07.97'N        | 08:42:57                   | 53.7             | -0.16        | 1.99                   |
| 099°30.0'E                  | 27°12.49'N        | 27°03.43'N        | 08:44:25                   | 23°19.16'N        | 23°12.93'N        | 08:43:07                   | 53.7             | -0.16        | 1.99                   |
| 099°37.5'E                  | 27°17.42'N        | 27°08.37'N        | 08:44:33                   | 23°24.22'N        | 23°17.78'N        | 08:43:17                   | 53.8             | -0.16        | 1.99                   |
| 099°45.0'E                  | 27°22.34'N        | 27°13.29'N        | 08:44:42                   | 23°29.24'N        | 23°22.70'N        | 08:43:27                   | 53.8             | -0.16        | 1.99                   |
| 099°52.5'E                  | 27°27.25'N        | 27°18.21'N        | 08:44:51                   | 23°34.21'N        | 23°27.68'N        | 08:43:37                   | 53.9             | -0.16        | 1.99                   |
| 100°00.0'E                  | 27°32.14'N        | 27°23.11'N        | 08:44:59                   | 23°39.18'N        | 23°32.63'N        | 08:43:47                   | 53.9             | -0.16        | 1.99                   |

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**TABLE 2.D – MAPPING COORDINATES FOR THE ZONES OF GRAZING ECLIPSE (EXTENDED)**

| ΔT = 66.0 s |                   |                   |                            |                   |                   |                            |                      |              |                        |
|-------------|-------------------|-------------------|----------------------------|-------------------|-------------------|----------------------------|----------------------|--------------|------------------------|
| Longitude   | North Graze Zone  |                   | Northern                   | South Graze Zone  |                   | Southern                   | Path<br>Azimuth<br>° | Elev<br>Fact | Scale<br>Fact<br>km/'' |
|             | Latitudes         |                   | Limit                      | Latitudes         |                   | Limit                      |                      |              |                        |
|             | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s |                      |              |                        |
| 100°07.5'E  | 27°37.02'N        | 27°27.99'N        | 08:45:07                   | 23°44.14'N        | 23°37.55'N        | 08:43:57                   | 54.0                 | -0.16        | 1.99                   |
| 100°15.0'E  | 27°41.89'N        | 27°32.87'N        | 08:45:16                   | 23°49.08'N        | 23°42.47'N        | 08:44:07                   | 54.0                 | -0.16        | 1.99                   |
| 100°22.5'E  | 27°46.74'N        | 27°37.73'N        | 08:45:24                   | 23°54.01'N        | 23°47.37'N        | 08:44:17                   | 54.1                 | -0.16        | 1.99                   |
| 100°30.0'E  | 27°51.58'N        | 27°42.58'N        | 08:45:32                   | 23°58.92'N        | 23°52.27'N        | 08:44:26                   | 54.2                 | -0.16        | 1.99                   |
| 100°37.5'E  | 27°56.41'N        | 27°47.41'N        | 08:45:40                   | 24°03.82'N        | 23°57.14'N        | 08:44:36                   | 54.2                 | -0.16        | 1.99                   |
| 100°45.0'E  | 28°01.22'N        | 27°52.24'N        | 08:45:48                   | 24°08.71'N        | 24°02.00'N        | 08:44:45                   | 54.3                 | -0.16        | 1.99                   |
| 100°52.5'E  | 28°06.02'N        | 27°57.04'N        | 08:45:56                   | 24°13.58'N        | 24°06.85'N        | 08:44:55                   | 54.3                 | -0.16        | 1.99                   |
| 101°00.0'E  | 28°10.81'N        | 28°01.84'N        | 08:46:04                   | 24°18.44'N        | 24°11.68'N        | 08:45:04                   | 54.4                 | -0.16        | 1.99                   |
| 101°07.5'E  | 28°15.59'N        | 28°06.62'N        | 08:46:11                   | 24°23.28'N        | 24°16.51'N        | 08:45:13                   | 54.4                 | -0.16        | 1.99                   |
| 101°15.0'E  | 28°20.35'N        | 28°11.40'N        | 08:46:19                   | 24°28.11'N        | 24°21.31'N        | 08:45:22                   | 54.5                 | -0.16        | 1.99                   |
| 101°22.5'E  | 28°25.10'N        | 28°16.15'N        | 08:46:26                   | 24°32.92'N        | 24°26.11'N        | 08:45:31                   | 54.6                 | -0.16        | 1.99                   |
| 101°30.0'E  | 28°29.83'N        | 28°20.90'N        | 08:46:34                   | 24°37.73'N        | 24°30.89'N        | 08:45:40                   | 54.6                 | -0.16        | 1.99                   |
| 101°37.5'E  | 28°34.55'N        | 28°25.63'N        | 08:46:41                   | 24°42.51'N        | 24°35.65'N        | 08:45:49                   | 54.7                 | -0.16        | 1.99                   |
| 101°45.0'E  | 28°39.26'N        | 28°30.35'N        | 08:46:49                   | 24°47.29'N        | 24°40.41'N        | 08:45:58                   | 54.7                 | -0.16        | 1.99                   |
| 101°52.5'E  | 28°43.96'N        | 28°35.06'N        | 08:46:56                   | 24°52.05'N        | 24°45.15'N        | 08:46:06                   | 54.8                 | -0.16        | 1.99                   |
| 102°00.0'E  | 28°48.64'N        | 28°39.76'N        | 08:47:03                   | 24°56.79'N        | 24°49.88'N        | 08:46:15                   | 54.8                 | -0.16        | 1.99                   |
| 102°07.5'E  | 28°53.31'N        | 28°44.44'N        | 08:47:10                   | 25°01.53'N        | 24°54.60'N        | 08:46:23                   | 54.9                 | -0.16        | 1.99                   |
| 102°15.0'E  | 28°57.97'N        | 28°49.11'N        | 08:47:17                   | 25°06.24'N        | 24°59.29'N        | 08:46:32                   | 55.0                 | -0.16        | 1.99                   |
| 102°22.5'E  | 29°02.61'N        | 28°53.76'N        | 08:47:24                   | 25°10.95'N        | 25°03.90'N        | 08:46:40                   | 55.0                 | -0.16        | 1.99                   |
| 102°30.0'E  | 29°07.25'N        | 28°58.41'N        | 08:47:31                   | 25°15.64'N        | 25°08.83'N        | 08:46:48                   | 55.1                 | -0.16        | 1.99                   |
| 102°37.5'E  | 29°11.87'N        | 29°03.04'N        | 08:47:38                   | 25°20.32'N        | 25°14.05'N        | 08:46:57                   | 55.1                 | -0.16        | 1.99                   |
| 102°45.0'E  | 29°16.47'N        | 29°07.66'N        | 08:47:44                   | 25°24.98'N        | 25°18.88'N        | 08:47:05                   | 55.2                 | -0.16        | 1.99                   |
| 102°52.5'E  | 29°21.07'N        | 29°12.27'N        | 08:47:51                   | 25°29.63'N        | 25°23.44'N        | 08:47:13                   | 55.2                 | -0.16        | 1.99                   |
| 103°00.0'E  | 29°25.65'N        | 29°16.86'N        | 08:47:58                   | 25°34.27'N        | 25°28.05'N        | 08:47:21                   | 55.3                 | -0.16        | 1.99                   |
| 103°07.5'E  | 29°30.22'N        | 29°21.44'N        | 08:48:04                   | 25°38.89'N        | 25°32.67'N        | 08:47:28                   | 55.4                 | -0.17        | 1.99                   |
| 103°15.0'E  | 29°34.77'N        | 29°26.02'N        | 08:48:11                   | 25°43.50'N        | 25°37.27'N        | 08:47:36                   | 55.4                 | -0.17        | 1.99                   |
| 103°22.5'E  | 29°39.32'N        | 29°30.57'N        | 08:48:17                   | 25°48.10'N        | 25°41.85'N        | 08:47:44                   | 55.5                 | -0.17        | 1.99                   |
| 103°30.0'E  | 29°43.85'N        | 29°35.12'N        | 08:48:23                   | 25°52.68'N        | 25°46.42'N        | 08:47:52                   | 55.5                 | -0.17        | 1.99                   |
| 103°37.5'E  | 29°48.37'N        | 29°39.65'N        | 08:48:30                   | 25°57.25'N        | 25°50.98'N        | 08:47:59                   | 55.6                 | -0.17        | 1.99                   |
| 103°45.0'E  | 29°52.87'N        | 29°44.17'N        | 08:48:36                   | 26°01.81'N        | 25°55.51'N        | 08:48:07                   | 55.6                 | -0.17        | 1.99                   |
| 103°52.5'E  | 29°57.36'N        | 29°48.68'N        | 08:48:42                   | 26°06.35'N        | 26°00.04'N        | 08:48:14                   | 55.7                 | -0.17        | 1.99                   |
| 104°00.0'E  | 30°01.84'N        | 29°53.18'N        | 08:48:48                   | 26°10.88'N        | 26°04.65'N        | 08:48:21                   | 55.7                 | -0.17        | 1.99                   |
| 104°07.5'E  | 30°06.31'N        | 29°57.66'N        | 08:48:54                   | 26°15.40'N        | 26°09.26'N        | 08:48:29                   | 55.8                 | -0.17        | 1.99                   |
| 104°15.0'E  | 30°10.77'N        | 30°02.13'N        | 08:49:00                   | 26°19.90'N        | 26°13.76'N        | 08:48:36                   | 55.9                 | -0.17        | 1.99                   |
| 104°22.5'E  | 30°15.21'N        | 30°06.60'N        | 08:49:06                   | 26°24.39'N        | 26°18.21'N        | 08:48:43                   | 55.9                 | -0.17        | 1.99                   |
| 104°30.0'E  | 30°19.65'N        | 30°11.04'N        | 08:49:11                   | 26°28.87'N        | 26°22.68'N        | 08:48:50                   | 56.0                 | -0.17        | 1.99                   |
| 104°37.5'E  | 30°24.06'N        | 30°15.48'N        | 08:49:17                   | 26°33.34'N        | 26°27.21'N        | 08:48:57                   | 56.0                 | -0.17        | 1.99                   |
| 104°45.0'E  | 30°28.47'N        | 30°19.90'N        | 08:49:23                   | 26°37.79'N        | 26°31.74'N        | 08:49:04                   | 56.1                 | -0.17        | 1.99                   |
| 104°52.5'E  | 30°32.87'N        | 30°24.31'N        | 08:49:28                   | 26°42.23'N        | 26°36.17'N        | 08:49:11                   | 56.1                 | -0.17        | 1.99                   |
| 105°00.0'E  | 30°37.25'N        | 30°28.72'N        | 08:49:34                   | 26°46.65'N        | 26°40.58'N        | 08:49:17                   | 56.2                 | -0.17        | 1.99                   |
| 105°07.5'E  | 30°41.62'N        | 30°33.11'N        | 08:49:39                   | 26°51.06'N        | 26°44.98'N        | 08:49:24                   | 56.2                 | -0.17        | 1.99                   |
| 105°15.0'E  | 30°45.98'N        | 30°37.48'N        | 08:49:45                   | 26°55.46'N        | 26°49.35'N        | 08:49:31                   | 56.3                 | -0.17        | 1.99                   |
| 105°22.5'E  | 30°50.32'N        | 30°41.85'N        | 08:49:50                   | 26°59.85'N        | 26°53.75'N        | 08:49:37                   | 56.4                 | -0.17        | 1.99                   |
| 105°30.0'E  | 30°54.63'N        | 30°46.20'N        | 08:49:55                   | 27°04.22'N        | 26°58.26'N        | 08:49:44                   | 56.4                 | -0.17        | 1.99                   |
| 105°37.5'E  | 30°59.01'N        | 30°50.54'N        | 08:50:00                   | 27°08.58'N        | 27°02.73'N        | 08:49:50                   | 56.5                 | -0.17        | 1.99                   |
| 105°45.0'E  | 31°03.48'N        | 30°54.87'N        | 08:50:05                   | 27°12.93'N        | 27°07.07'N        | 08:49:56                   | 56.5                 | -0.17        | 1.99                   |
| 105°52.5'E  | 31°07.92'N        | 30°59.19'N        | 08:50:11                   | 27°17.27'N        | 27°11.39'N        | 08:50:03                   | 56.6                 | -0.17        | 1.99                   |
| 106°00.0'E  | 31°12.22'N        | 31°03.49'N        | 08:50:16                   | 27°21.59'N        | 27°15.71'N        | 08:50:09                   | 56.6                 | -0.17        | 1.99                   |

## ANNULAR SOLAR ECLIPSE OF 2010 JANUARY 15

### TABLE 2.D – MAPPING COORDINATES FOR THE ZONES OF GRAZING ECLIPSE (EXTENDED)

| $\Delta T = 66.0 \text{ s}$ |                   |                   |                            |                   |                   |                            |                  |              |                        |
|-----------------------------|-------------------|-------------------|----------------------------|-------------------|-------------------|----------------------------|------------------|--------------|------------------------|
| Longitude                   | North Graze Zone  |                   | Northern                   | South Graze Zone  |                   | Southern                   | Path<br>Azm<br>° | Elev<br>Fact | Scale<br>Fact<br>km/'' |
|                             | Latitudes         |                   | Limit                      | Latitudes         |                   | Limit                      |                  |              |                        |
|                             | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s |                  |              |                        |
| 106°07.5'E                  | 31°16.46'N        | 31°07.79'N        | 08:50:20                   | 27°25.90'N        | 27°20.01'N        | 08:50:15                   | 56.7             | -0.17        | 1.99                   |
| 106°15.0'E                  | 31°20.70'N        | 31°12.07'N        | 08:50:25                   | 27°30.20'N        | 27°24.30'N        | 08:50:21                   | 56.7             | -0.17        | 1.99                   |
| 106°22.5'E                  | 31°24.96'N        | 31°16.34'N        | 08:50:30                   | 27°34.48'N        | 27°28.58'N        | 08:50:27                   | 56.8             | -0.17        | 1.99                   |
| 106°30.0'E                  | 31°29.32'N        | 31°20.60'N        | 08:50:35                   | 27°38.75'N        | 27°32.84'N        | 08:50:33                   | 56.9             | -0.17        | 1.99                   |
| 106°37.5'E                  | 31°33.67'N        | 31°24.85'N        | 08:50:40                   | 27°43.01'N        | 27°37.09'N        | 08:50:39                   | 56.9             | -0.17        | 1.99                   |
| 106°45.0'E                  | 31°37.93'N        | 31°29.08'N        | 08:50:44                   | 27°47.26'N        | 27°41.42'N        | 08:50:45                   | 57.0             | -0.17        | 1.99                   |
| 106°52.5'E                  | 31°42.12'N        | 31°33.31'N        | 08:50:49                   | 27°51.49'N        | 27°45.76'N        | 08:50:50                   | 57.0             | -0.17        | 1.99                   |
| 107°00.0'E                  | 31°46.30'N        | 31°37.52'N        | 08:50:53                   | 27°55.72'N        | 27°50.01'N        | 08:50:56                   | 57.1             | -0.17        | 2.00                   |
| 107°07.5'E                  | 31°50.48'N        | 31°41.73'N        | 08:50:58                   | 27°59.93'N        | 27°54.20'N        | 08:51:02                   | 57.1             | -0.17        | 2.00                   |
| 107°15.0'E                  | 31°54.65'N        | 31°45.92'N        | 08:51:02                   | 28°04.12'N        | 27°58.39'N        | 08:51:07                   | 57.2             | -0.17        | 2.00                   |
| 107°22.5'E                  | 31°58.80'N        | 31°50.10'N        | 08:51:07                   | 28°08.31'N        | 28°02.57'N        | 08:51:13                   | 57.2             | -0.17        | 2.00                   |
| 107°30.0'E                  | 32°02.94'N        | 31°54.26'N        | 08:51:11                   | 28°12.48'N        | 28°06.74'N        | 08:51:18                   | 57.3             | -0.18        | 2.00                   |
| 107°37.5'E                  | 32°07.08'N        | 31°58.42'N        | 08:51:15                   | 28°16.64'N        | 28°10.94'N        | 08:51:23                   | 57.4             | -0.18        | 2.00                   |
| 107°45.0'E                  | 32°11.20'N        | 32°02.57'N        | 08:51:19                   | 28°20.79'N        | 28°15.14'N        | 08:51:29                   | 57.4             | -0.18        | 2.00                   |
| 107°52.5'E                  | 32°15.31'N        | 32°06.70'N        | 08:51:24                   | 28°24.93'N        | 28°19.28'N        | 08:51:34                   | 57.5             | -0.18        | 2.00                   |
| 108°00.0'E                  | 32°19.40'N        | 32°10.82'N        | 08:51:28                   | 28°29.05'N        | 28°23.39'N        | 08:51:39                   | 57.5             | -0.18        | 2.00                   |
| 108°07.5'E                  | 32°23.49'N        | 32°14.94'N        | 08:51:32                   | 28°33.16'N        | 28°27.48'N        | 08:51:44                   | 57.6             | -0.18        | 2.00                   |
| 108°15.0'E                  | 32°27.57'N        | 32°19.04'N        | 08:51:36                   | 28°37.26'N        | 28°31.69'N        | 08:51:49                   | 57.6             | -0.18        | 2.00                   |
| 108°22.5'E                  | 32°31.63'N        | 32°23.13'N        | 08:51:40                   | 28°41.35'N        | 28°35.98'N        | 08:51:54                   | 57.7             | -0.18        | 2.00                   |
| 108°30.0'E                  | 32°35.68'N        | 32°27.20'N        | 08:51:43                   | 28°45.42'N        | 28°40.14'N        | 08:51:59                   | 57.7             | -0.18        | 2.00                   |
| 108°37.5'E                  | 32°39.73'N        | 32°31.27'N        | 08:51:47                   | 28°49.49'N        | 28°44.17'N        | 08:52:04                   | 57.8             | -0.18        | 2.00                   |
| 108°45.0'E                  | 32°43.76'N        | 32°35.33'N        | 08:51:51                   | 28°53.57'N        | 28°48.21'N        | 08:52:09                   | 57.8             | -0.18        | 2.00                   |
| 108°52.5'E                  | 32°47.78'N        | 32°39.37'N        | 08:51:55                   | 28°57.65'N        | 28°52.28'N        | 08:52:14                   | 57.9             | -0.18        | 2.00                   |
| 109°00.0'E                  | 32°51.79'N        | 32°43.41'N        | 08:51:58                   | 29°01.72'N        | 28°56.37'N        | 08:52:18                   | 57.9             | -0.18        | 2.00                   |
| 109°07.5'E                  | 32°55.78'N        | 32°47.43'N        | 08:52:02                   | 29°05.77'N        | 29°00.42'N        | 08:52:23                   | 58.0             | -0.18        | 2.00                   |
| 109°15.0'E                  | 32°59.77'N        | 32°51.44'N        | 08:52:05                   | 29°09.82'N        | 29°04.43'N        | 08:52:28                   | 58.1             | -0.18        | 2.00                   |
| 109°22.5'E                  | 33°03.75'N        | 32°55.45'N        | 08:52:09                   | 29°13.85'N        | 29°08.42'N        | 08:52:32                   | 58.1             | -0.18        | 2.00                   |
| 109°30.0'E                  | 33°07.71'N        | 32°59.44'N        | 08:52:12                   | 29°17.88'N        | 29°12.41'N        | 08:52:37                   | 58.2             | -0.18        | 2.00                   |
| 109°37.5'E                  | 33°11.67'N        | 33°03.42'N        | 08:52:16                   | 29°21.89'N        | 29°16.37'N        | 08:52:41                   | 58.2             | -0.18        | 2.00                   |
| 109°45.0'E                  | 33°15.61'N        | 33°07.38'N        | 08:52:19                   | 29°25.88'N        | 29°20.36'N        | 08:52:45                   | 58.3             | -0.18        | 2.00                   |
| 109°52.5'E                  | 33°19.54'N        | 33°11.34'N        | 08:52:22                   | 29°29.87'N        | 29°24.41'N        | 08:52:50                   | 58.3             | -0.18        | 2.00                   |
| 110°00.0'E                  | 33°23.46'N        | 33°15.29'N        | 08:52:26                   | 29°33.84'N        | 29°28.41'N        | 08:52:54                   | 58.4             | -0.18        | 2.00                   |
| 110°07.5'E                  | 33°27.37'N        | 33°19.23'N        | 08:52:29                   | 29°37.81'N        | 29°32.33'N        | 08:52:58                   | 58.4             | -0.18        | 2.00                   |
| 110°15.0'E                  | 33°31.27'N        | 33°23.15'N        | 08:52:32                   | 29°41.76'N        | 29°36.22'N        | 08:53:02                   | 58.5             | -0.18        | 2.00                   |
| 110°22.5'E                  | 33°35.16'N        | 33°27.07'N        | 08:52:35                   | 29°45.70'N        | 29°40.15'N        | 08:53:06                   | 58.5             | -0.18        | 2.00                   |
| 110°30.0'E                  | 33°39.04'N        | 33°30.97'N        | 08:52:38                   | 29°49.63'N        | 29°44.19'N        | 08:53:10                   | 58.6             | -0.18        | 2.00                   |
| 110°37.5'E                  | 33°42.91'N        | 33°34.86'N        | 08:52:41                   | 29°53.55'N        | 29°48.17'N        | 08:53:14                   | 58.6             | -0.18        | 2.00                   |
| 110°45.0'E                  | 33°46.77'N        | 33°38.74'N        | 08:52:44                   | 29°57.45'N        | 29°52.00'N        | 08:53:18                   | 58.7             | -0.18        | 2.00                   |
| 110°52.5'E                  | 33°50.61'N        | 33°42.60'N        | 08:52:47                   | 30°01.35'N        | 29°55.85'N        | 08:53:22                   | 58.8             | -0.18        | 2.00                   |
| 111°00.0'E                  | 33°54.45'N        | 33°46.45'N        | 08:52:50                   | 30°05.23'N        | 29°59.75'N        | 08:53:26                   | 58.8             | -0.18        | 2.00                   |
| 111°07.5'E                  | 33°58.28'N        | 33°50.29'N        | 08:52:53                   | 30°09.10'N        | 30°03.63'N        | 08:53:30                   | 58.9             | -0.18        | 2.00                   |
| 111°15.0'E                  | 34°02.09'N        | 33°54.12'N        | 08:52:55                   | 30°12.96'N        | 30°07.51'N        | 08:53:34                   | 58.9             | -0.18        | 2.00                   |
| 111°22.5'E                  | 34°05.90'N        | 33°57.93'N        | 08:52:58                   | 30°16.81'N        | 30°11.32'N        | 08:53:37                   | 59.0             | -0.19        | 2.00                   |
| 111°30.0'E                  | 34°09.69'N        | 34°01.74'N        | 08:53:01                   | 30°20.65'N        | 30°15.12'N        | 08:53:41                   | 59.0             | -0.19        | 2.00                   |
| 111°37.5'E                  | 34°13.48'N        | 34°05.54'N        | 08:53:03                   | 30°24.48'N        | 30°18.96'N        | 08:53:44                   | 59.1             | -0.19        | 2.00                   |
| 111°45.0'E                  | 34°17.25'N        | 34°09.33'N        | 08:53:06                   | 30°28.29'N        | 30°22.74'N        | 08:53:48                   | 59.1             | -0.19        | 2.00                   |
| 111°52.5'E                  | 34°21.01'N        | 34°13.10'N        | 08:53:09                   | 30°32.10'N        | 30°26.52'N        | 08:53:51                   | 59.2             | -0.19        | 2.00                   |
| 112°00.0'E                  | 34°24.77'N        | 34°16.87'N        | 08:53:11                   | 30°35.89'N        | 30°30.29'N        | 08:53:55                   | 59.2             | -0.19        | 2.00                   |



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## TABLE 2.D – MAPPING COORDINATES FOR THE ZONES OF GRAZING ECLIPSE (EXTENDED)

| $\Delta T = 66.0 \text{ s}$ |                   |                   |                            |                   |                   |                            |                  |              |                        |
|-----------------------------|-------------------|-------------------|----------------------------|-------------------|-------------------|----------------------------|------------------|--------------|------------------------|
| Longitude                   | North Graze Zone  |                   | Northern                   | South Graze Zone  |                   | Southern                   | Path<br>Azm<br>° | Elev<br>Fact | Scale<br>Fact<br>km/'' |
|                             | Latitudes         |                   | Limit                      | Latitudes         |                   | Limit                      |                  |              |                        |
|                             | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s |                  |              |                        |
| 112°07.5'E                  | 34°28.51'N        | 34°20.63'N        | 08:53:13                   | 30°39.67'N        | 30°34.04'N        | 08:53:58                   | 59.3             | -0.19        | 2.00                   |
| 112°15.0'E                  | 34°32.24'N        | 34°24.37'N        | 08:53:16                   | 30°43.44'N        | 30°37.79'N        | 08:54:01                   | 59.3             | -0.19        | 2.00                   |
| 112°22.5'E                  | 34°35.96'N        | 34°28.11'N        | 08:53:18                   | 30°47.20'N        | 30°41.52'N        | 08:54:05                   | 59.4             | -0.19        | 2.00                   |
| 112°30.0'E                  | 34°39.68'N        | 34°31.83'N        | 08:53:21                   | 30°50.95'N        | 30°45.25'N        | 08:54:08                   | 59.4             | -0.19        | 2.00                   |
| 112°37.5'E                  | 34°43.38'N        | 34°35.55'N        | 08:53:23                   | 30°54.69'N        | 30°48.96'N        | 08:54:11                   | 59.5             | -0.19        | 2.00                   |
| 112°45.0'E                  | 34°47.07'N        | 34°39.25'N        | 08:53:25                   | 30°58.42'N        | 30°52.66'N        | 08:54:14                   | 59.6             | -0.19        | 2.00                   |
| 112°52.5'E                  | 34°50.76'N        | 34°42.95'N        | 08:53:27                   | 31°02.13'N        | 30°56.35'N        | 08:54:17                   | 59.6             | -0.19        | 2.00                   |
| 113°00.0'E                  | 34°54.43'N        | 34°46.64'N        | 08:53:29                   | 31°05.83'N        | 31°00.03'N        | 08:54:20                   | 59.7             | -0.19        | 2.00                   |
| 113°07.5'E                  | 34°58.08'N        | 34°50.31'N        | 08:53:31                   | 31°09.53'N        | 31°03.70'N        | 08:54:23                   | 59.7             | -0.19        | 2.00                   |
| 113°15.0'E                  | 35°01.71'N        | 34°53.97'N        | 08:53:34                   | 31°13.21'N        | 31°07.36'N        | 08:54:26                   | 59.8             | -0.19        | 2.00                   |
| 113°22.5'E                  | 35°05.39'N        | 34°57.63'N        | 08:53:36                   | 31°16.88'N        | 31°11.01'N        | 08:54:29                   | 59.8             | -0.19        | 2.00                   |
| 113°30.0'E                  | 35°09.17'N        | 35°01.28'N        | 08:53:38                   | 31°20.54'N        | 31°14.65'N        | 08:54:32                   | 59.9             | -0.19        | 2.00                   |
| 113°37.5'E                  | 35°12.94'N        | 35°04.91'N        | 08:53:39                   | 31°24.19'N        | 31°18.28'N        | 08:54:35                   | 59.9             | -0.19        | 2.00                   |
| 113°45.0'E                  | 35°16.58'N        | 35°08.54'N        | 08:53:41                   | 31°27.83'N        | 31°21.90'N        | 08:54:37                   | 60.0             | -0.19        | 2.00                   |
| 113°52.5'E                  | 35°20.16'N        | 35°12.15'N        | 08:53:43                   | 31°31.46'N        | 31°25.50'N        | 08:54:40                   | 60.0             | -0.19        | 2.00                   |
| 114°00.0'E                  | 35°23.74'N        | 35°15.76'N        | 08:53:45                   | 31°35.08'N        | 31°29.10'N        | 08:54:43                   | 60.1             | -0.19        | 2.00                   |
| 114°07.5'E                  | 35°27.32'N        | 35°19.35'N        | 08:53:47                   | 31°38.69'N        | 31°32.68'N        | 08:54:45                   | 60.1             | -0.19        | 2.00                   |
| 114°15.0'E                  | 35°30.90'N        | 35°22.94'N        | 08:53:48                   | 31°42.29'N        | 31°36.26'N        | 08:54:48                   | 60.2             | -0.19        | 2.00                   |
| 114°22.5'E                  | 35°34.47'N        | 35°26.52'N        | 08:53:50                   | 31°45.87'N        | 31°39.82'N        | 08:54:50                   | 60.2             | -0.19        | 2.00                   |
| 114°30.0'E                  | 35°38.00'N        | 35°30.08'N        | 08:53:52                   | 31°49.45'N        | 31°43.38'N        | 08:54:53                   | 60.3             | -0.19        | 2.00                   |
| 114°37.5'E                  | 35°41.49'N        | 35°33.64'N        | 08:53:53                   | 31°53.01'N        | 31°46.92'N        | 08:54:55                   | 60.3             | -0.19        | 2.00                   |
| 114°45.0'E                  | 35°45.07'N        | 35°37.19'N        | 08:53:55                   | 31°56.56'N        | 31°50.45'N        | 08:54:58                   | 60.4             | -0.19        | 2.00                   |
| 114°52.5'E                  | 35°48.90'N        | 35°40.72'N        | 08:53:56                   | 32°00.11'N        | 31°53.97'N        | 08:55:00                   | 60.4             | -0.19        | 2.00                   |
| 115°00.0'E                  | 35°52.81'N        | 35°44.25'N        | 08:53:58                   | 32°03.64'N        | 31°57.48'N        | 08:55:02                   | 60.5             | -0.19        | 2.00                   |
| 115°07.5'E                  | 35°56.58'N        | 35°47.77'N        | 08:53:59                   | 32°07.16'N        | 32°00.98'N        | 08:55:05                   | 60.5             | -0.20        | 2.00                   |
| 115°15.0'E                  | 36°00.12'N        | 35°51.28'N        | 08:54:01                   | 32°10.67'N        | 32°04.46'N        | 08:55:07                   | 60.6             | -0.20        | 2.00                   |
| 115°22.5'E                  | 36°03.54'N        | 35°54.78'N        | 08:54:02                   | 32°14.17'N        | 32°07.93'N        | 08:55:09                   | 60.7             | -0.20        | 2.00                   |
| 115°30.0'E                  | 36°06.98'N        | 35°58.27'N        | 08:54:04                   | 32°17.66'N        | 32°11.37'N        | 08:55:11                   | 60.7             | -0.20        | 2.00                   |
| 115°37.5'E                  | 36°10.45'N        | 36°01.75'N        | 08:54:05                   | 32°21.15'N        | 32°14.75'N        | 08:55:13                   | 60.8             | -0.20        | 2.00                   |
| 115°45.0'E                  | 36°13.91'N        | 36°05.22'N        | 08:54:06                   | 32°24.60'N        | 32°18.23'N        | 08:55:15                   | 60.8             | -0.20        | 2.00                   |
| 115°52.5'E                  | 36°17.34'N        | 36°08.68'N        | 08:54:07                   | 32°28.04'N        | 32°21.70'N        | 08:55:17                   | 60.9             | -0.20        | 2.00                   |
| 116°00.0'E                  | 36°20.77'N        | 36°12.13'N        | 08:54:09                   | 32°31.47'N        | 32°25.18'N        | 08:55:19                   | 60.9             | -0.20        | 2.00                   |
| 116°07.5'E                  | 36°24.23'N        | 36°15.57'N        | 08:54:10                   | 32°35.05'N        | 32°27.83'N        | 08:55:21                   | 61.0             | -0.20        | 2.00                   |
| 116°15.0'E                  | 36°27.70'N        | 36°19.05'N        | 08:54:11                   | 32°38.63'N        | 32°30.51'N        | 08:55:23                   | 61.0             | -0.20        | 2.00                   |
| 116°22.5'E                  | 36°31.17'N        | 36°22.53'N        | 08:54:12                   | 32°42.21'N        | 32°33.19'N        | 08:55:25                   | 61.1             | -0.20        | 2.00                   |
| 116°30.0'E                  | 36°34.64'N        | 36°25.99'N        | 08:54:13                   | 32°45.79'N        | 32°35.77'N        | 08:55:27                   | 61.1             | -0.20        | 2.00                   |
| 116°37.5'E                  | 36°38.11'N        | 36°29.45'N        | 08:54:14                   | 32°49.37'N        | 32°38.35'N        | 08:55:29                   | 61.2             | -0.20        | 2.01                   |
| 116°45.0'E                  | 36°41.58'N        | 36°32.91'N        | 08:54:15                   | 32°52.95'N        | 32°40.93'N        | 08:55:30                   | 61.2             | -0.20        | 2.01                   |
| 116°52.5'E                  | 36°45.05'N        | 36°36.37'N        | 08:54:16                   | 32°56.53'N        | 32°43.51'N        | 08:55:32                   | 61.3             | -0.20        | 2.01                   |
| 117°00.0'E                  | 36°48.52'N        | 36°39.83'N        | 08:54:17                   | 32°60.11'N        | 32°46.09'N        | 08:55:34                   | 61.3             | -0.20        | 2.01                   |
| 117°07.5'E                  | 36°51.99'N        | 36°43.29'N        | 08:54:18                   | 32°63.69'N        | 32°48.67'N        | 08:55:35                   | 61.4             | -0.21        | 2.01                   |
| 117°15.0'E                  | 36°55.46'N        | 36°46.75'N        | 08:54:18                   | 32°67.27'N        | 32°51.25'N        | 08:55:37                   | 61.5             | -0.21        | 2.01                   |
| 117°22.5'E                  | 36°58.93'N        | 36°50.21'N        | 08:54:19                   | 32°70.85'N        | 32°53.83'N        | 08:55:38                   | 61.5             | -0.21        | 2.01                   |
| 117°30.0'E                  | 37°02.40'N        | 36°53.67'N        | 08:54:20                   | 32°74.43'N        | 32°56.41'N        | 08:55:40                   | 61.6             | -0.21        | 2.01                   |
| 117°37.5'E                  | 37°05.87'N        | 36°57.13'N        | 08:54:21                   | 32°78.01'N        | 32°58.99'N        | 08:55:41                   | 61.6             | -0.21        | 2.01                   |
| 117°45.0'E                  | 37°09.34'N        | 37°00.59'N        | 08:54:21                   | 32°81.59'N        | 33°01.57'N        | 08:55:43                   | 61.7             | -0.22        | 2.01                   |
| 117°52.5'E                  | 37°12.81'N        | 37°04.05'N        | 08:54:22                   | 32°85.17'N        | 33°04.15'N        | 08:55:44                   | 61.8             | -0.22        | 2.01                   |
| 118°00.0'E                  | 37°16.28'N        | 37°07.51'N        | 08:54:23                   | 32°88.75'N        | 33°06.73'N        | 08:55:45                   | 61.8             | -0.23        | 2.02                   |

## ANNULAR SOLAR ECLIPSE OF 2010 JANUARY 15

**TABLE 2.D – MAPPING COORDINATES FOR THE ZONES OF GRAZING ECLIPSE (EXTENDED)**

| $\Delta T = 66.0 \text{ s}$ |                   |                   |                            |                   |                   |                            |                  |              |                        |
|-----------------------------|-------------------|-------------------|----------------------------|-------------------|-------------------|----------------------------|------------------|--------------|------------------------|
| Longitude                   | North Graze Zone  |                   | Northern                   | South Graze Zone  |                   | Southern                   | Path<br>Azm<br>° | Elev<br>Fact | Scale<br>Fact<br>km/'' |
|                             | Latitudes         |                   | Limit                      | Latitudes         |                   | Limit                      |                  |              |                        |
|                             | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s | Northern<br>Limit | Southern<br>Limit | Universal<br>Time<br>h m s |                  |              |                        |
| 118°07.5'E                  | 37°18.33'N        | 37°09.36'N        | 08:54:23                   | 33°27.63'N        | 33°27.63'N        | 08:55:47                   | 61.9             | -0.23        | 2.02                   |
| 118°15.0'E                  | 37°21.61'N        | 37°12.64'N        | 08:54:24                   | 33°30.92'N        | 33°30.92'N        | 08:55:48                   | 62.0             | -0.24        | 2.02                   |
| 118°22.5'E                  | 37°24.88'N        | 37°15.91'N        | 08:54:24                   | 33°34.20'N        | 33°34.20'N        | 08:55:49                   | 62.1             | -0.26        | 2.03                   |
| 118°30.0'E                  | 37°28.14'N        | 37°19.17'N        | 08:54:25                   | 33°37.47'N        | 33°37.47'N        | 08:55:50                   | 62.2             | -0.29        | 2.05                   |
| 118°37.5'E                  | 37°31.39'N        | 37°22.43'N        | 08:54:25                   | 33°40.73'N        | 33°40.73'N        | 08:55:51                   | 62.3             | -0.31        | 2.06                   |
| 118°45.0'E                  | 37°34.63'N        | 37°25.68'N        | 08:54:26                   | 33°43.98'N        | 33°43.98'N        | 08:55:53                   | 62.3             | -0.30        | 2.05                   |
| 118°52.5'E                  | 37°37.85'N        | 37°28.92'N        | 08:54:26                   | 33°47.22'N        | 33°47.22'N        | 08:55:54                   | 62.3             | -0.29        | 2.05                   |
| 119°00.0'E                  | 37°41.05'N        | 37°32.15'N        | 08:54:27                   | 33°50.45'N        | 33°50.45'N        | 08:55:55                   | 62.3             | -0.28        | 2.04                   |
| 119°07.5'E                  | 37°44.24'N        | 37°35.39'N        | 08:54:28                   | 33°53.67'N        | 33°53.67'N        | 08:55:56                   | 62.4             | -0.27        | 2.04                   |
| 119°15.0'E                  | 37°47.40'N        | 37°38.63'N        | 08:54:29                   | 33°56.89'N        | 33°56.89'N        | 08:55:57                   | 62.4             | -0.26        | 2.03                   |
| 119°22.5'E                  | 37°50.53'N        | 37°41.87'N        | 08:54:30                   | 34°00.09'N        | 34°00.09'N        | 08:55:58                   | 62.4             | -0.24        | 2.02                   |
| 119°30.0'E                  | 37°53.64'N        | 37°45.12'N        | 08:54:32                   | 34°03.29'N        | 34°03.29'N        | 08:55:58                   | 62.4             | -0.23        | 2.02                   |
| 119°37.5'E                  | 37°56.70'N        | 37°48.38'N        | 08:54:35                   | 34°06.48'N        | 34°06.48'N        | 08:55:59                   | 62.4             | -0.21        | 2.01                   |
| 119°45.0'E                  | 37°59.73'N        | 37°51.66'N        | 08:54:38                   | 34°09.65'N        | 34°09.65'N        | 08:56:00                   | 62.4             | -0.19        | 2.00                   |
| 119°52.5'E                  | 38°02.70'N        | 37°54.97'N        | 08:54:42                   | 34°12.83'N        | 34°12.83'N        | 08:56:01                   | 62.4             | -0.16        | 1.99                   |
| 120°00.0'E                  | 38°05.62'N        | 37°58.31'N        | 08:54:47                   | 34°15.98'N        | 34°15.98'N        | 08:56:02                   | 62.5             | -0.13        | 1.98                   |
| 120°07.5'E                  | 38°08.47'N        | 38°01.69'N        | 08:54:53                   | 34°19.13'N        | 34°19.13'N        | 08:56:02                   | 62.5             | -0.10        | 1.98                   |
| 120°15.0'E                  | 38°11.25'N        | 38°05.12'N        | 08:55:00                   | 34°22.27'N        | 34°22.27'N        | 08:56:03                   | 62.5             | -0.06        | 1.97                   |
| 120°22.5'E                  | 38°13.94'N        | 38°08.61'N        | 08:55:09                   | 34°25.40'N        | 34°25.40'N        | 08:56:04                   | 62.5             | -0.01        | 1.97                   |
| 120°30.0'E                  | 38°16.54'N        | 38°12.16'N        | 08:55:20                   | 34°28.53'N        | 34°28.53'N        | 08:56:04                   | 62.5             | 0.05         | 1.97                   |
| 120°37.5'E                  | 38°19.04'N        | 38°15.80'N        | 08:55:33                   | 34°31.64'N        | 34°31.64'N        | 08:56:05                   | 62.5             | 0.13         | 1.98                   |
| 120°45.0'E                  | 38°21.41'N        | 38°19.53'N        | 08:55:49                   | 34°34.75'N        | 34°34.75'N        | 08:56:06                   | 62.5             | 0.22         | 2.01                   |
| 120°52.5'E                  | 38°23.65'N        | 38°23.37'N        | 08:56:07                   | 34°37.85'N        | 34°37.85'N        | 08:56:06                   | 62.5             | 0.35         | 2.09                   |