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U. S. DEPARTMENT OF COMMERCE

Frederick H. Mueller, Secretary

COAST AND GEODETIC SURVEY—WASHINGTON

H. Arnold Karo, Director

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National Oceanic and Atmospheric Administration

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1959

The instrumental results of the following stations are tabulated in this report.

**Balboa Heights, C. Z. (BH)
The Panama Canal Co.
*Boulder City, Nev. (BC)
Bureau of Reclamation
*Bozeman, Mont. (BOZ)
Montana State College
*Butte, Mont. (BUT)
Montana School of Mines
*Chicago, Ill. (CHI)
University of Chicago and
U. S. Weather Bureau
College, Alaska (COL)
*Columbia, S. C. (COLU)
University of South Carolina
*Eureka, Nev. (EUR)
Eureka Corporation Limited
Guam, M. I. (GUAM)
Honolulu, T. H. (HONO)
*Hungry Horse, Mont. (HH)
Bureau of Reclamation
Kipapa, T. H. (KIP)
*Lincoln, Nebr. (LIN)
Nebraska Wesleyan University
**Philadelphia, Pa. (PHIL)
The Franklin Institute
**Rapid City, S. D. (RC)
South Dakota State School of Mines
*Salt Lake City, Utah (SLC)
University of Utah
San Juan, Puerto Rico (SJ)
Sitka, Alaska (SIT)
*Thule, Greenland (THULE)
U. S. Army Ionosphere Station
Tucson, Ariz. (TUC)
Tucson, Ariz. Telemeter (TUC-T)
Ukiah, Calif. (UK)
International Latitude Observatory
Washington, D. C. (WASH)

*Indicates a station maintained by a local institution in cooperation with the Coast and Geodetic Survey.
**Indicates a station operating on an independent basis.
Other stations are observatories of the Coast and Geodetic Survey.

All seismogram interpretations are made or revised at Washington except those for Balboa Heights. Beginning January 1, 1959 the data from the horizontal components of the seismographs at all stations except College, Honolulu, and Tucson will not be published for earthquakes occurring outside the United States. The horizontal instruments will continue in operation and the seismograms for the local and regional earthquakes will be scaled and the data published.

All magnitude determinations are by Pasadena unless otherwise stated. Minor earthquakes are listed at the end of the bulletin.

One asterisk (*) following an origin time indicates probable error of one-tenth minute. Two asterisks (**) following an origin time indicates error of one-quarter minute. All origin times and location are determined from P data only. For Pasadena epicenters the time is given in one-tenth minute.

All seismograms are on file in the Coast and Geodetic Survey, except those from Balboa Heights, which may be obtained on loan by addressing the Seismograph Station Director, Meteorological and Hydrographic Office, Panama Canal Company, Balboa Height, Canal Zone.

STATION AND INSTRUMENTAL CONSTANTS FOR 1959

Station	Position	Instruments	Foundation and Elevation	T_o	T_g	T_s	V	Σ	Paper Speed	Time Break Reference Point	Ground Motion Trace "Up"
Balboa Heights, C. Z.	Log cos 9.99467	W-A, N&E	Basalt	N 1.0				14:1	60mm/min.	Beginning	N
W. H. Esslinger	Lat. 8°57'39"N	Mass 1.3 g	36 m.	E 1.0							E
In Charge	Long. 79°33'29"W	Spg. LP (Series H)		N 20			5000				
		Spg. LP (Series H)		E 20	20		5000				
		Spg. LP (Series D-H)		Z 1.9	1.9		3000				
Boulder City, Nev.	Log cos 9.90806	B, film	Fractured	Z 1.4	0.45		360000**	Near crit.	15mm/min.	Beginning	Up
C.M. Smith	Lat. 35°58'51"N	ZNE, Mass	monzonite	N 1.4	0.45		148000	crit.			N
In Charge	Long. 114°50'02"W	100 lb.	776 m.	E 1.4	0.45		148000	crit.			E
Bozeman, Mont.	Log cos 9.84437	Spg, N&E	Alluvium	N 11.1	8.3		8000	3:1	30mm/min.	Beginning	N
F. H. C. Schultz	Lat. 45°40'01"N		glacial drift	E 10.9	7.6		8000	11:1			E
In Charge	Long. 111°02'43"W	W-L, Z	and lake deposits 500' thick over gneiss and schist. 1490 m.	Z 1.1	1.7		24000	Under damped	60mm/min.	Beginning	Up
Butte, Mont.	Log cos 9.84167	W-A, N.	Rhyolite	N 6.99				21:1	15mm/min.	Beginning	S
S. W. Nile	Lat. 46°00.8' N	Mass 2 g	30 m. thick								
In Charge	Long. 112°33.8' W	W-L, NE	resting on	N 8.0	3.8		12000	Near crit.	30mm/min.	Beginning	N
			granite	E 8.0	3.9		12000	Near crit.			W
		B, paper, Z Mass 100 lb.	1758 m.	Z 1.1	0.5		50000	Near crit.	60mm/min.		Up
Chicago, Ill.	Log cos 9.87251	McC-R, N&E	Limestone	N 10			335	15:1	15mm/min.	End	N
W. F. Schmidt	Lat. 41°47.3' N	Mass 2.5 kg	180 m.	E 10			335	15:1			W
In Charge	Long. 87°36.0' W										
College, Alaska	Log cos 9.62825	W-L, film, ZNE	Granitic	Z 1.5	0.45		40000	Near crit.	15mm/min.	Beginning	Up
C. J. Beers	Lat. 64°51.6' N	Mass 100 lb.	schist.	N 1.5	0.45		100000	Near crit.			N
In Charge	Long. 147°50.2' W		159 m.	E 1.5	0.45		100000	Near crit.			E
		W, N		N 9.3	16		1000	Near crit.			N
[1]College Outpost	Log cos 9.62781	B, paper, Z		Z 1.5	0.53		425000	Near crit.	60mm/min.		Up
C. J. Beers	Lat. 64°53'08"N										
In Charge	Long. 147°48'04"W										
Columbia, S. C.	Log cos 9.91857	W-L, ZNE	Consolidated	Z 1.1	1.6		24000	Under damped	60mm/min.	Beginning	Up
C. F. Mercer	Lat. 34°00' N		sand 150'	N 8.0	4.1		13000		30mm/min.		N
In Charge	Long. 81°02' W		thick over granite, 94m.	E 8.0	4.1		13000				E
Eureka, Nev.	Log cos 9.88739	B, paper, Z	Dolomite	Z 1.23	0.51		500000	Near crit.	60mm/min.	Beginning	Up
R. N. Breckenridge	Lat. 39°30'09"N	Mass 100 lb.	bedrock								
In Charge	Long. 115°59'22"W		6870 ft.								
[3]Guam, Mariana Islands	Log cos 9.98767	W-L, Z		Z 1.00	1.67		5000		30mm/min.	Beginning	Up
J. V. Hasting	Lat. 13°35'15"N	Spg, NE		N 8.9	6.8		3000				N
In Charge	Long. 144°51'58"E										

Station	Position	Instrument	Foundation and Elevation		T_o	T_g	T_s	V	Σ	Paper Speed	Time Break Reference Point	Ground Motion Trace "Up"
Guam, Mariana Islands	Log cos 9.98789	W-L, Z GE gal	Coral	Z	1.1	1.5		18000	20:1	30mm/min.	Beginning	Up
Cmdr. James Cox	Lat. 13°27'45"N	B-VR, paper,	168 m.	N	1.0	18		15000	Near crit.	30mm/min.	Beginning	N
In Charge	Long. 144°43'29"E	NS L-N gal										
		B-VR, paper		E	1.0	17		15000	20:1	30mm/min.	Beginning	N
		EW L-N gal										
		B-VR, film, Z		Z	1.0	0.2		24000		15mm/min.	Beginning	Up
		Geotech gal										
		B-VR, film,		N	1.0	0.2		15000		15mm/min.	Beginning	N
		NS Geotech gal										
		B-VR, film,		E	1.0	0.2		15000		15mm/min.	Beginning	E
		EW Geotech gal										
*Honolulu, T. H.	Log cos 9.96926	M-S, N&E	Coral 3m.	N	12			124	20:1	15mm/min.	Beginning	N
G. E. Haraden	Lat. 21°18'13"N	Mass 1 lb.		E	12			142	20:1			W
In Charge	Long. 158°05'44"W	HTL Z		Z	0.5	0.5		20000		60mm/min.		Up
		Lamont, ZNE		Z	15	75		8000				Up
				N	15	75		8000				N
				E	15	75		8000				W
Hungry Horse, Mont.	Log cos 9.82255	B-VR, Z	Argillaceous	Z	1.05	0.5		188000	Near crit.	60mm/min.	Beginning	Up
R. D. Bush	Lat. 48°20'58"N		Limestone	Z	1.05	92			Near crit.	30mm/min.	Beginning	Up
In Charge	Long. 114°01'39"W	W-L, N	(Belt series)	N	3.5	3.9		10000	Near crit.	30mm/min.	Beginning	N
		W-L, E	1100 m.	E	3.4	4.1		10000	Near crit.	30mm/min.	Beginning	E
Kipapa, T. H.	Log cos 9.96893	B-VR	Basalt	Z	1.09	0.2		30000	Near crit.	60mm/min.	Beginning	Up
G. E. Haraden	Lat. 21°35.3' N		75 m.									
	Long. 158°00.9' W											
Lincoln, Nebr.	Log cos 9.87824	Spg, N&E	Dakota sand-	N	3.95	6.2		4800	2.11:1	15mm/min.	Beginning	N
C. L. Moore	Lat. 40°50.3' N		stone. 366 m.	E	4.3	6.8		4800	2.32:1	15mm/min.	Beginning	E
In Charge	Long. 96°39.2' W											
*Philadelphia, Pa.	Log cos 9.38452	W, N&E	Cape May	N	9.0	5.4	7.8	1400	15:1	20mm/min.	End	S
I. M. Levitt	Lat. 39°57'32"N	Mass 500 g.	sand and	E	9.2	4.1	7.4	1400	15:1			E
In Charge	Long. 75°10'30"W		gravel. 5 m.									
Rapid City, S. Dak.	Log cos 9.35637	W-A, E	Shale	E	6.2			725	15:1	15mm/min.	Beginning	E
E. L. Tullis	Lat. 44°04.6' N	(Dbl. refl.)	1045 m.									
In Charge	Long. 103°12.0' W	Mass 2 g.										
		W-L, Z		Z		1.6	1.1	20000		60mm/min.		Up
Salt Lake City, Utah	Log cos 9.87932	McC-R, N&E	Bonneville	N	9.9			335	15:1	15mm/min.	Beginning	N
A. M. Anderson	Lat. 40°45'55"N	Mass 2.5 kg.	Lake beds	E	10			335	15:1			W
In Charge	Long. 111°50'54"W	W-L, Z	1425 m.	Z	1.2	1.8		24000	Near crit.	60mm/min.		Up
San Juan, P. R.	Log cos 9.97726	W, N&E	Limestone	N	9.8	15.6	10.4		20:1	30mm/min.	Beginning	N
M. Vazquez	Lat. 18°22.9' N	Mass 500 g.	80 m.	E	9.8	16.8	10.4	1280	20:1			W
In Charge	Long. 66°07.1' W	B, Z		Z		0.5	1.05	20000	crit.	60mm/min.		Up
*Sitka, Alaska	Log cos 9.73544	W, N&E	Graywacke	N	7.5	16.5	8.2	1000	20:1	15mm/min.	Beginning	S
M. L. Cleven	Lat. 57°03'25"N	Mass 500 g.	19 m.	E	7.5	13.2	8.2	1000	5.5:1			E
In Charge	Long. 135°19'28"W	W-L, Z		Z	1.12	1.5		24000		60mm/min.		Up

Station	Position	Instruments	Foundation and Elevation	T_o	T_g	T_s	V	Σ	Paper Speed	Time Break Reference Point	Ground Motion Trace "Up"
Thule, Greenland Capt. C. R. de Zafra In Charge	Log cos 9.36644 Lat. 76°33.4' N Long. 68°40.5' W	W-L, Z	Glacial material 275 m.	1.3	1.55		12000	Near crit.	60mm/min.	Beginning	Up
*Tucson, Ariz. R. L. Viets In Charge	Log cos 9.92725 Lat. 32°14.8' N Long. 110°50.1' W	W-A, N&E Mass 2.3 g. B, Z(LP) (SP) B, E	Caliche or gravels 100-300 m. thick 700 m.	N 8.0 E 8.0 Z 1.0 E 1.6	 77 0.236 0.5		466 457 50000 50000 25000	crit. crit. Near crit.	30mm/min. 30mm/min. 60mm/min. 30mm/min.	Beginning	S E Up Up W
[2]Tucson Telemeter R. L. Viets In Charge	Log cos 9.92682 Lat. 32°20.1' N Long. 110°43.4' W	B, Z Mass 100 lb.	Granite	1.1	0.5	0.6	425000	Near crit.	60mm/min.	Beginning	Up
Ukiah, Calif. L. F. Caouette In Charge	Log cos 9.88968 Lat. 39°08' N Long. 123°13' W	McC-R, N&E Mass 10 kg. W-L, Z	Alluvium 180 m. deep. 199 m.	N 11.9 E 11.6 Z 1.1	 1.4		75 75 24000	Near crit.	30mm/min. 60mm/min.	Beginning	N E Up
*Washington, D. C.	Log cos 9.89117 Lat. 38°53'33"N Long. 77°01'59"W	W-L, Z Visible recorder	Recent alluvium on Schistose granite. 0 m.	Z 1.5	1.7 Pen 0.5	1.5	10000		30mm/min.	Beginning	Up

*These stations operate visible recording seismographs of Coast and Geodetic Survey design similar to the one at Washington.

**Magnifications for film records are stated as read using an 8 power viewer.

B - Benioff Moving Coil, B-VR - Benioff Variable Reluctance, W - Wenner, McC-R - McComb-Romberg, W-A - Wood-Anderson, M-S - Milne-Shaw, HTL - Houston Technical Laboratory, Spg - Sprengnether, W-L - Wilson-Lamison

[1]The Seismometer is in a vault about 2.1 miles northeast of the main station. The signal is carried by cable to the main vault where it is fed into a galvanometer and recorded on photographic paper.

[2]The seismometer is about nine miles northeast of the main station. The signal is transmitted by FM-FM radio to the main recorder room where it is recorded photographically.

[3]This is temporary instrumentation for site tests and operation pending completion of the vault.

Date 1959	Origin Time G. C. T.	Lat.	Long.	Region, Focal Depth, and Remarks
July	h m s	°	°	
1	01 13 03*	19 N.	65 W.	Virgin Islands region. Felt at San Juan. h about 100 km.
1	02 27 46*	28 N.	139½ E.	Bonin Islands region. h about 550 km. Mag. 6.
1	10 32 29*	16½ S.	69½ W.	Peru-Bolivia border. h about 200 km.
1	23 49 20*	35 N.	119½ W.	California. Felt at Kern County. Mag. 4.8.
2	05 03 50*	51 N.	179 E.	Rat Islands, Aleutian Islands.
2	11 27 45*	20 S.	178½ W.	Fiji Islands. h about 650 km.
2	11 34 20*	20 S.	178½ W.	do.
3	03 51 06*	14½ S.	74 W.	Peru. h about 100 km.
3	05 21 13*	58½ N.	152 W.	Kodiak Island region.
3	17 55 10*	16 S.	173 E.	New Hebrides Islands region. Mag. 6½.
3	17 55 53*	16 S.	173 E.	do.
4	03 04 05**			Near coast of Nicaragua.
4	04 54 14*	24½ S.	177 W.	Tonga Islands region. h about 100 km.
5	05 33 07*	52½ N.	159 E.	Kamchatka.
5	14 05 42*	6 S.	146½ E.	Near northeast coast of New Guinea.
5	15 53 37*	8 S.	74 W.	Peru-Brazil border. h about 200 km.
6	06 25 11*	14½ S.	168 E.	New Hebrides Islands.
6	08 28 20*	15½ S.	75 W.	Peru.
6	08 51 27**			Guatemala-Honduras border.
6	09 10 17*	26½ S.	61 W.	Chaco Province, Argentina. h about 600 km. Mag. 6-3/4.
6	09 23 21*	26½ S.	61½ W.	Chaco Province, Argentina. h about 600 km. Mag. 6-3/4 - 7.
6	15 10 15**			Samoa Islands region.
6	18 03 33*	7 N.	73 W.	Colombia. h about 200 km.
7	05 42 45*	21½ S.	66½ W.	Bolivia. h about 150 km.
7	05 49 14*	4½ S.	145 E.	Eastern New Guinea.
7	07 26 58*	44 N.	148 E.	Kurile Islands
7	13 29 59*	21½ S.	67 W.	Bolivia. h about 200 km.
7	14 40 55*	40 N.	143½ E.	Off east coast of Honshu, Japan.
8	02 40 00*	71½ N.	19 W.	Near east coast of Greenland.
8	04 00 37*	44 N.	147½ E.	Kurile Islands. h about 100 km.
8	13 04 03*	5 S.	134 E.	Aroe Island region.
9	02 32 40*	20 S.	72 W.	Off coast of Peru.
9	09 07 11*	15 S.	173½ W.	Samoa Islands region.
9	10 17 47*	9 S.	153 E.	D'Entrecasteaux Islands.
9	16 05 18*	20½ S.	68 W.	Chile-Bolivia border. h about 100 km. Mag. 6-3/4.
10	02 13 27*	27½ S.	177½ W.	Kermadec Islands region.
10	04 11 40*	19 S.	69 W.	Chile-Bolivia border.
10	15 54 00*	7 S.	105½ E.	Sunda Strait.

Date 1959	Origin Time G. C. T.	Lat.	Long.	Region, Focal Depth, and Remarks
July	h m s	°	°	
10	17 40 47*	41 N.	73½ E.	Kirghiz S.S.R.
10	17 51 46*	5½ S.	145½ E.	New Guinea.
11	03 07 04**			Fiji Islands region.
11	04 51 30*	18½ S.	169 E.	New Hebrides Islands.
11	12 01 39*	37 S.	79 E.	Indian Ocean. Mag. 6-1/4 - 6-1/2.
11	18 23 00*	44½ N.	148½ E.	Kurile Islands.
12	00 13 30*	8½ S.	157½ E.	Solomon Islands.
12	00 24 22*	19½ S.	177½ W.	Fiji Islands region. h about 400 km. Mag. 6-1/4.
12	19 21 57*	42 N.	72½ E.	Kirghiz S.S.R.
13	01 39 12*	71½ N.	7½ W.	Jan Mayen Island.
13	04 36 00**			Sumbawa Island region.
13	12 28 45*	52 N.	172½ W.	Andreanof Islands, Aleutian Islands. Mag. 6-1/2.
13	15 24 44*	25½ S.	180	Kermadec Islands region. h about 500 km.
13	23 59 59*	50½ N.	170 W.	Fox Islands region, Aleutian Islands.
14	08 40 48*	51½ N.	172 W.	Fox Islands, Aleutian Islands.
14	11 33 51*	57 N.	158 W.	Alaska Peninsula. h about 60 km.
14	13 00 24*	16½ S.	173 E.	New Hebrides Islands region. h about 100 km.
14	18 14 51*	21 S.	179 W.	Fiji Islands region. h about 700 km.
14	22 31 22*	½ N.	120 E.	Near north coast of Celebes.
16	07 00 05*	54 N.	161 W.	South of Alaska Peninsula.
16	15 17 27*	50½ N.	177 W.	Andreanof Islands region, Aleutian Islands.
16	19 13 52*	21½ S.	169 E.	Loyalty Islands.
17	07 34 45**			Tonga Islands.
17	22 52 08*	7½ N.	71½ W.	Colombia-Venezuela border.
17	23 21 28*	60½ N.	153½ W.	Southern Alaska. h about 150 km.
18	07 00 36*	21½ S.	179 W.	Fiji Islands region. h about 600 km.
18	12 18 35*	50½ N.	130 W.	Off coast of Vancouver, British Columbia.
18	19 29 22**			Fiji Islands region.
18	19 54 57*	15½ N.	120½ E.	Luzon, Philippine Islands. Felt. h about 150 km. Mag. 6-1/2 - 6-3/4.
19	03 42 02*	6½ S.	105 E.	Sunda Strait.
19	13 44 52*	23½ S.	179 E.	Fiji Islands region.
19	15 06 10*	15 S.	70½ W.	Peru. Felt in Northern Chile. h about 200 km. Mag. 7.
19	15 36 17*	15½ S.	71 W.	Southern Peru. h about 200 km.
20	00 46 30*	30½ S.	71 W.	Central Chile.
20	02 41 04*	6 S.	111 E.	Near north coast of Java. h about 500 km.
20	09 16 35*	15½ S.	173½ W.	Samoa Island region.
20	16 53 38*	23½ S.	179 E.	Fiji Islands region. h about 600 km.
21	00 43 38*	9 S.	151 E.	Off coast of eastern New Guinea.

Date 1959	Origin Time G. C. T.	Lat.	Long.	Region, Focal Depth, and Remarks
July	h m s	°	°	
21	01 32 55**			D'Entrecasteaux Islands.
21	07 43 13*	14½ S.	167½ E.	New Hebrides Islands. Mag. 6-1/4.
21	09 17 51*	19 N.	68½ W.	Near north coast of Dominican Republic. Felt on Puerto Rico. Mag. 6.
21	12 29 09*	16 N.	98 W.	Near coast of Oaxaca, Mexico. Mag. 6.
21	13 03 31*	16 N.	98 W.	do.
21	17 39 29*	37 N.	112½ W.	Utah-Arizona border. Mag. 5-1/2 - 5-3/4.
22	04 51 30*	15½ N.	97½ W.	Off coast of Oaxaca, Mexico.
22	11 15 33*	2 N.	126½ E.	Molucca Passage.
22	15 53 53*	15½ N.	97½ W.	Near coast of Oaxaca, Mexico.
22	16 36 40*	30 S.	178½ W.	Kermadec Islands.
22	19 24 17*	53 N.	153 E.	Sea of Okhotsk. h about 650 km. Mag. 6-1/4 (Perk).
22	23 02 27*	5 S.	152½ E.	New Britain. Felt. h about 60 km.
23	00 04 49*	5 S.	152½ E.	New Britain Island. Felt at Rabaul.
23	02 08 31**			New Britain-Solomon Islands region.
23	03 48 12*	3 N.	71 W.	Colombia. h about 60 km.
23	04 24 35*	3 N.	76½ W.	Colombia.
23	08 15 12*	44½ N.	124½ W.	Near coast of Oregon.
23	13 45 20*	38 N.	140 E.	Honshu, Japan.
23	14 56 45*	24½ S.	176 W.	Tonga Islands region. h about 60 km. Mag. 5-3/4 (Berk).
23	21 25 39*	25 N.	125½ E.	Ryukyu Islands.
24	01 23 09*	41 N.	125½ W.	Off coast of northern California. Felt at Humboldt County. Mag. 5-3/4.
24	03 35 24*	41 N.	125½ W.	Off coast of California.
24	05 12 40*	21 S.	70½ W.	Chile.
24	16 17 30*	24½ N.	94½ E.	India-Burma border.
24	19 20 03*	5½ S.	153 E.	New Britain Island region.
24	23 03 08*	56½ S.	28½ W.	Sandwich Islands.
25	15 58 50*	50 N.	142½ E.	Sakhalin.
25	21 20 35*	37 N.	140½ E.	Honshu, Japan. h about 100 km.
26	17 07 03*	41 N.	27½ E.	Northwestern Turkey. Felt at Istanbul.
26	19 37 40*	53 N.	160 E.	Kamchatka.
27	05 27 45**			About 900 miles west of Galapagos Islands.
29	00 30 54*	18½ S.	178 W.	Fiji Islands. h about 650 km.
29	18 54 03*	5½ S.	154 E.	Solomon Islands region.
30	06 12 18**			Indian Ocean, near 49 S., 118 E.
30	12 53 56*	31½ S.	177½ W.	Kermadec Islands.
30	16 45 55*	36 N.	70½ E.	Hindu Kush. h about 200 km.
31	01 51 45*	16½ S.	71 W.	Southern Peru. h about 150 km.

Date 1959	Origin Time G. C. T.	Lat.	Long.	Region, Focal Depth, and Remarks
July	h m s	°	°	
31	04 59 23*	5 S.	152½ E.	New Britain.
31	18 23 10*	44½ N.	100 E.	Outer Mongolia.
31	18 35 12*	6½ S.	154½ E.	Solomon Islands.
31	19 53 02*	38½ N.	70 E.	Tadzhik S.S.R.
31	20 40 31*	40 S.	174 E.	North Island, New Zealand. Felt at Foxton. h about 200 km.

Date and Station		Phase	(GCT) h m s
July 1			
COL		eP	01 24 10
COLU		eP	01 17 42
		eS	21 31
EUR		iP	01 21 43
RC		iP	01 20 40
SJ		iP	01 13 25
		iS	13 40
		iL	13 44
TUC		iP	01 21 03
TUC-T		iP	01 21 02
WASH		eP	01 18 12
July 1			
SJ		iP	01 29 52
		eS	30 17
		eL	30 19
July 1			
BUT		iP	02 39 11
		epP	41 01
COL		iP	02 36 47
		ipP	38 30
		iS	44 06
		eScS	45 39
		esS	46 57
		eSS	47 58
		esSS	50 42
		eL	53 48
		eP'P'	03 06 10
EUR		iP	02 39 18
		e	41 09
		ipP	41 16
		ePP	44 10
		eS	48 47
GUAM		iP	02 31 00
		iS	33 41
HH		iP	02 39 02
		epP	40 49
		e(S)	48 19
RC		iP	02 39 43
		epP	41 36
SJ		eP'	02 45 53
		epP'	47 56
		e(sP')	48 25
SIT		eP	02 37 33
		eP'P'	03 04 05
		e	06 49
THULE		iP	02 38 28
		epP	40 22
		eS	47 11
TUC		iP	02 39 54
		epP	41 46
TUC-T		iP	02 39 54
		ipP	41 47
		iPP	45 16
		eS	49 34
		iS	50 04
		ePKKP	57 19
July 1			
EUR		eP	05 22 58
July 1			
COL		eP	05 33 37
EUR		eP	05 34 30
July 1			
COL		iP	05 42 27
July 1			
COL		eP	05 55 20
EUR		eP	05 54 48
TUC-T		eP	05 54 45
July 1			
SJ		iP	06 00 50
		e(S)	01 12
		eL	01 19
July 1			
COL		eP	06 48 56
July 1			
EUR		eP	08 48 16
TUC-T		eP	08 48 29
July 1			
COL		e(P)	10 45 58
EUR		iP	10 43 29
		ipP	44 06
RC		eP	10 43 12
		e	43 38
		epP	43 49
SJ		eP	10 39 10
TUC		eP	10 42 37
TUC-T		iP	10 42 37
July 1			
COL		e(P)	11 57 45
July 1			
EUR		e(P)	14 07 56
July 1			
TUC-T		eP	14 29 38
July 1			
EUR		iP	15 54 32
July 1			
COL		iP	19 17 45
EUR		iP	19 18 38
July 1			
COL		eP	20 25 30
July 1			
COL		e(P)	23 56 17
EUR		iP	23 50 39
		i	51 02
		eS	51 36
		eL	51 49
RC		eP	23 53 01
		e	53 15
TUC		eP	23 51 11
		e	51 40
		i	53 22
TUC-T		e(P)	23 51 31
		eL	53 23
UK		eP	23 50 44
		e	51 09
		eL	52 05
July 2			
KIP		eP	02 50 47
July 2			
COL		iP	05 08 48
EUR		iP	05 12 14
TUC		eP	05 13 14
TUC-T		eP	05 13 14
July 2			
EUR		e(P)	09 33 01
July 2			
TUC-T		eP	11 36 19
July 2			
COL		iP	11 39 34
		epP	41 45
EUR		iP	11 39 12
		epP	41 31
GUAM		iP	11 35 42
TUC		iP	11 39 13
TUC-T		iP	11 39 14
		epP	41 27
July 2			
BOZ		eP	11 46 18
COL		iP	11 46 08
		epP	48 20
		e(S)	56 03
EUR		iP	11 45 47
		i	46 28
		epP	47 59
		eP'P'	12 12 09
GUAM		eP	11 42 16
		iP	42 18
HONO		eP	11 41 53
KIP		eP	11 41 54
RC		eP	11 46 37
SLC		eP	11 46 01
TUC		iP	11 45 48
		e	46 05
TUC-T		iP	11 45 49
		epP	48 05
		ePKKP	12 04 03
		eP'P'	12 13
UK		eP	11 45 24
July 2			
COL		iP	15 22 53
July 2			
EUR		eP	17 48 04
TUC-T		eP	17 46 31
July 2			
COL		iP	18 44 31
July 2			
BOZ		eP	19 47 04
COL		e(P)	19 49 34
EUR		eP	19 46 06
HH		e(P)	19 46 50
		eL	52 05
RC		e(P)	19 48 04
		e	48 09
TUC		iP	19 47 44
TUC-T		eP	19 47 44
UK		e(P)	19 45 37
July 2			
COL		e(P)	19 53 03

Date and Station		Phase (GCT)
		h m s
July 2		
COL	eP	20 07 54
EUR	eP	20 01 49
RC	eP	20 05 48
TUC	iP	20 03 32
TUC-T	eP	20 03 32
UK	eP	20 01 13
July 2		
EUR	eP	20 08 46
July 2		
COL	eP	20 32 37
EUR	iP	20 35 06
UK	eP	20 32 55
July 2		
SJ	eP	20 46 45
July 3		
EUR	eP	00 34 11
RC	eP	00 36 09
TUC	eP	00 35 48
TUC-T	eP	00 35 47
July 3		
EUR	eP	01 14 31
July 3		
EUR	eP	04 01 52
	i	02 18
RC	eP	04 01 36
	e	02 08
TUC	e(P)	04 01 02
TUC-T	eP	04 00 58
	e	01 06
July 3		
SIT	eP	05 18 10
July 3		
BOZ	eP	05 27 03
BUT	eP	05 26 51
COL	iP	05 22 55
	eS	24 22
	iL	24 44
COLU	eP	05 30 21
EUR	iP	05 27 21
HH	eP	05 26 32
	e	28 13

Date and Station		Phase (GCT)
		h m s
HH	e(S)	05 31 07
	eL	33 45
RC	iP	05 27 47
	e	28 01
SJ	iP	05 32 38
SIT	eP	05 23 22
	e	23 30
	eL	25 09
THULE	iP	05 27 46
TUC	iP	05 28 33
TUC-T	iP	05 28 33
	e	28 43
	iPcP	30 19
WASH	iP	05 30 09
	eL	47 59
	e	59 16
July 3		
EUR	eP	09 34 10
July 3		
EUR	eP	09 39 47
July 3		
TUC	eP	09 49 08
TUC-T	eP	09 49 07
July 3		
EUR	eP	10 51 43
RC	eP	10 52 17
July 3		
COL	eP	11 04 04
	iL	06 27
July 3		
EUR	eP	11 36 02
July 3		
COL	eP	15 06 04
EUR	eP	15 06 48
July 3		
EUR	eP	17 45 27
July 3		
BOZ	eP	18 08 24
BUT	eP	18 08 19
COL	iP	18 07 52
	i	08 18
EUR	iP	18 07 55
	ePKKP	25 51
	eP'P'	33 56
GUAM	iP	18 02 53

Date and Station		Phase (GCT)
		h m s
GUAM	iPcP	18 04 33
	eS	09 46
HONO	eP	18 03 44
	iS	10 16
	i	10 46
	i	10 56
HH	eP	18 08 19
RC	eP	18 08 44
SLC	eP	18 08 11
SJ	eP'	18 14 11
SIT	eP	18 07 48
TUC	iP	18 08 02
	ePP	11 39
TUC-T	iP	18 08 02
	ePP	11 40
	eP'P'	33 55
	iP'P'	34 03
UK	eP	18 07 28
July 3		
BOZ	eP	18 09 05
	e	09 14
	ePKKP	26 14
BUT	eP	18 09 00
	eS	19 33
COL	iP	18 08 35
	eSS	24 01
	eSSS	27 57
	eP'P'	34 35
	eL	35 28
COLU	eP'	18 15 14
EUR	iP	18 08 38
	iPKKP	26 36
	iP'P'	34 39
GUAM	iP	18 03 35
HONO	iP	18 04 26
	i	05 16
	iPP	06 26
	iS	10 16
	iS	11 12
	eT	53 44
	iT	54 38
HH	eP	18 09 00
	ePP	12 57
	eSKS	19 36
	ePS	21 34
	eP'P'	34 36
	eL	37 17
KIP	eP	18 04 26

Date and Station		Phase (GCT)
		h m s
RC	eP	18 09 26
	ePP	13 25
	e(PKKP)	26 00
	eP'P'	34 21
SLC	eP	18 08 54
	eSKS	19 24
	eL	31 12
SJ	iP'	18 14 51
	ePKS	18 36
SIT	iP	18 08 31
TUC	iP	18 08 43
	ePP	12 18
	eS	19 12
	i	20 25
	eSS	25 22
	eL	32 07
	eP'P'	34 41
TUC-T	iP	18 08 44
	ePKKP	26 35
	e	27 10
	iP'P'	34 37
UK	iP	18 08 11
WASH	eP'	18 14 34
	iPP	15 39
	esP	25 20
	eL	48 21
July 3		
SJ	eP	23 23 43
	e	24 43
July 3		
BH	eP	23 23 16
	eS	23 33
EUR	eP	23 29 25
SJ	eP	23 26 01
July 4		
SJ	iP	02 39 22
	i(S)	39 45
	iL	39 47
July 4		
COL	eP	03 14 58
EUR	eP	03 11 19
	iP	11 22
RC	eP	03 10 58
TUC	eP	03 10 17
TUC-T	eP	03 10 15
	i	10 18
July 4		
BH	eP	04 23 44
	eS	24 08
July 4		
COL	iP	05 07 17
	ipP	07 51

Date and Station		Phase	(GCT) h m s
EUR	iP		05 06 48
	ipP		07 22
GUAM	iP		05 03 27
	ipP		03 59
	isP		04 22
	iPcP		04 35
	isS		11 46
TUC	iP		05 06 46
	ipP		07 20
TUC-T	iP		05 06 46
	iPP		07 21
July 4			
COL	eP		07 48 39
THULE	iP		07 44 49
July 4			
TUC-T	eP		11 11 52
July 4			
COL	iP		11 43 32
July 4			
COL	eP		13 46 04
July 4			
COL	eP		15 24 43
July 4			
TUC	eP		21 45 09
July 4			
GUAM	iP		22 00 23
	iS		00 44
July 5			
EUR	e(P)		01 43 11
	eP		43 13
	eS		43 54
	eL		43 58
RC	eP		01 44 05
SLC	eP		01 42 18
	eS		42 38
	eL		42 53
TUC	e(P)		01 44 59
	e		46 58
July 5			
EUR	eP		03 19 32
July 5			
TUC	eP		04 22 02
July 5			
COL	eP		05 39 11
EUR	iP		05 42 56
RC	eP		05 43 38
	e		43 46
July 5			
TUC	eP		06 06 28
July 5			
EUR	eP		08 25 43
SIT	eP		08 25 08
July 5			
COL	i(P)		12 53 21
July 5			
COL	iP		14 18 19
EUR	eP		14 19 22
GUAM	eP		14 10 26
SJ	eP'		14 25 23
July 5			
COL	eP		16 06 21
	ipP		07 02
	isP		07 12
EUR	eP		16 03 35
	epP		04 10
	esP		04 25
RC	iP		16 03 15
	epP		03 55
SJ	eP		15 59 09
TUC	iP		16 02 39
	ipP		03 13
July 5			
EUR	eP		18 32 19
July 5			
COL	eP		20 58 31
EUR	eP		20 52 48
July 5			
EUR	eP		22 45 26
July 6			
COL	eP		03 58 50
July 6			
COL	eP		06 37 53
EUR	iP		06 38 09
TUC	eP		06 38 18
July 6			
EUR	eP		08 39 13
July 6			
COL	eP		09 02 00
EUR	eP		08 58 15
July 6			
BH	iP		09 17 03
BOZ	eP		09 21 53C
	e(pP)		24 08
	eS		31 17
BUT	iP		09 21 57
	e(S)		31 27
COL	iP		09 23 57C
	ipP		26 14
	isP		27 20
	iP'		27 49
	eSKS		33 35
	e		34 40
	eS		35 22
	iPKKP		38 48
	esS		39 30
	esPS		41 07
COLU	eP		09 19 52
	eS		27 34
EUR	iP		09 21 43C
	iS		31 14
	iP'P'		50 43
GUAM	iP'		09 29 01
	ipP'		31 31
	iSKKS		38 42
HONO	eP		09 22 55
	eSKS		32 54
	iSP		36 04
	esP		38 46
	eL		54 46
HH	iP		09 22 09C
	epP		24 24
	ePP		25 46
	e(SKS)		31 26
	e		33 12
RC	iP		09 21 29C
	ipP		23 41
SJ	iP		09 17 44D
	ipP		19 36
	eS		23 37
SLC	iP		09 21 38C
TUC	iP		09 21 02C
	epP		23 19
	isP		24 11
	eS		29 48
	iS		29 50
	eP'P'		50 39
	i		51 01
UK	iP		09 22 04C
	epP		24 24
WASH	iP		09 20 16
	e		22 03
	ipP		22 20
	eS		27 42
	eP'P'		48 34
July 6			
BH	iP		09 30 12
BOZ	eP		09 35 03C
BUT	iP		09 35 08
	eS		44 37
	ePSP		48 47
COL	eP		09 37 07
	iP'		40 56
	eSKS		46 46
	e		47 48
	eS		48 33
	e		49 34
	e		51 15
	esS		52 35
COLU	eP		09 33 00
	eS		40 40
EUR	iP		09 34 54C
	i		36 15
	iS		44 16
	e		10 00 55
	iP'P'		03 42
GUAM	iP'		09 42 13
	epP'		44 36
HH	iP		09 35 19C
	epP		37 33
	eSKS		44 48
	i		45 10
	eS		46 14
RC	iP		09 34 32
	ipP		36 59
	iS		43 52
	eP'P'		10 03 47
	e(SKPP)		08 13
SJ	iP		09 30 53C
	ipP		32 45
	iS		36 44
SLC	iP		09 34 48C
SIT	e(P')		09 40 53
TUC	iP		09 34 12C
	ipP		36 19
	ePP		37 28
	iS		42 58
	eScS		43 26
	e(sS)		47 08
	e(pP'P')		10 03 49
	iSKPP'		04 14
UK	iP		09 35 13C
	ipP		37 27
	eS		44 54
WASH	iP		09 33 24
	ipP		35 28
	eS		41 21
	eP'P'		10 01 36

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Date and Station		Phase (GCT) h m s
July 6		
COL	eP	15 22 33
EUR	eP	15 21 52
RC	eP	15 22 50
TUC	eP	15 23 31
July 6		
COL	iP	18 15 12
EUR	iP	18 12 17
RC	eP	18 11 38
SJ	eP	18 06 36
	i	06 46
	i	08 54
TUC	iP	18 11 22
July 6		
SJ	iP	19 29 51
	iS	30 07
	iL	30 08
July 6		
EUR	eP	21 29 31
July 6		
BH	iP	22 39 12
	iS	39 41
July 7		
EUR	eP	01 08 34
July 7		
COL	iP	02 49 49
	e	50 03
EUR	iP	02 53 46
RC	eP	02 53 48
TUC	eP	02 53 55
July 7		
EUR	iP	05 54 23
	ipP	55 00
RC	eP	05 54 07
	e	54 41
SJ	eP	05 50 10
	e	50 43
TUC	iP	05 53 33
TUC-T	iP	05 53 33
July 7		
COL	eP	06 01 51
July 7		
SJ	e(P)	06 31 33
	e	31 51

Date and Station		Phase (GCT) h m s
July 7		
COL	iP	07 32 41
EUR	eP	07 35 58
RC	eP	07 36 25
July 7		
EUR	e(P)	11 02 49
July 7		
COL	iP	12 30 25
July 7		
EUR	iP	13 41 28
	ipP	42 05
GUAM	iP'	13 49 27
RC	iP	13 41 12
TUC	iP	13 40 39
TUC-T	iP	13 40 39
July 7		
COL	eP	14 49 18
EUR	eP	14 52 29
RC	eP	14 52 54
	e	52 58
July 7		
SJ	eP	16 06 34
July 7		
COL	eP	17 00 03
GUAM	eP	17 02 13
	i	02 16
July 7		
SJ	e(P)	19 23 39
July 7		
SJ	iP	19 53 14
	e(S)	54 50
	eL	54 52
July 7		
KIP	eP	23 15 20
July 8		
EUR	eP	00 45 38
July 8		
BOZ	eP	02 12 42
COL	eP	02 11 35
EUR	eP	02 13 37
RC	eP	02 12 34
TUC	eP	02 14 13

Date and Station		Phase (GCT) h m s
TUC-T	eP	02 14 11
July 8		
SJ	eP	02 40 04
	e	40 18
July 8		
COL	iP	04 08 10
	ipP	08 35
EUR	iP	04 11 27
RC	iP	04 11 52
TUC	e(P)	04 12 15
July 8		
COL	i(P)	07 48 56
July 8		
COL	e(P)	08 31 09
July 8		
COL	iP	08 31 40
July 8		
GUAM	iP	09 00 35
	iS	00 58
July 8		
BH	iP	09 27 45
	iS	28 08
July 8		
GUAM	eP	13 08 58
July 8		
COL	iP	16 43 20
	iS	43 42
	iL	43 50
July 8		
EUR	e(P)	23 51 52
July 9		
BOZ	eP	02 44 20
BUT	eP	02 44 26
EUR	iP	02 44 06
RC	iP	02 43 51
TUC	iP	02 43 14
TUC-T	iP	02 43 14
WASH	eP	02 42 39
July 9		
GUAM	iP	04 21 21
	iS	21 38
July 9		
EUR	eP	04 34 31
July 9		
EUR	eP	06 19 38

Date and Station		Phase (GCT) h m s
July 9		
COL	iP	07 06 51
July 9		
COL	iP	09 19 33
EUR	eP	09 19 02
TUC	eP	09 19 03
TUC-T	eP	09 19 03
July 9		
COL	eP	10 30 28
	e	31 21
EUR	eP	10 31 23
GUAM	e(P)	10 23 12
July 9		
COL	iP	11 16 42
July 9		
COL	eP	12 18 17
July 9		
GUAM	iP	12 49 23
	iS	50 39
July 9		
BH	iP	16 11 13
	iS	17 32
BOZ	eP	16 17 00
	e	17 40
	eS	26 36
BUT	iP	16 17 09
	epP	17 35
	eS	26 19
COL	eP	16 19 12C
	ipP	19 44
	isP	19 58
	eP'	23 13
	iPP	24 03
	eS	30 43
	e	31 38
	ePPS	33 13
	eSS	38 06
	eSSS	41 56
	eL	55 18
COLU	eP	16 14 45
	epP	15 14
	ePcP	16 09
	eS	22 20
EUR	iP	16 16 45D
	ipP	17 18
	e(PKKP)	35 35
	e(P'P')	42 23
	eP'P'	44 16

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Date and Station		Phase	(GCT) h m s
GUAM		iP'	16 24 52
		ipP'	25 27
		isP'	25 40
HONO		eP	16 18 46
		e	19 49
		ePP	22 40
		ipPP	23 18
		iS	30 04
		i(PS)	31 52
		eSS	36 48
		eL	49 06
HH		iP	16 17 19D
		ipP	17 50
		isP	18 00
		e(PP)	20 17
		epPP	20 49
		e(S)	27 12
		esS	27 56
		eL	44 12
KIP		eP	16 18 46
		epP	19 15
		esP	19 26
RC		iP	16 16 33D
		ipP	17 03
		eP'P'	44 21
SJ		iP	16 12 34
		iS	18 20
SLC		eP	16 16 42
		epP	17 13
		eS	26 06
		eL	35 02
SIT		e(P)	16 18 36
		e	19 17
		iPP	23 07
TUC		iP	16 16 00D
		ipP	16 29
		iS	24 43
		e	27 52
		eL	32 11
		iP'P'	44 38
TUC-T		iP	16 16 00D
		ipP	16 30
		iP'P'	44 35
UK		eP	16 17 13
		epP	17 41
		isP	17 56
WASH		eP	16 15 18C
		epP	15 44
		iPcP	16 07
		isPP	18 19
		e(ScP)	19 41
		eP'P'	44 51
July 9			
COL		iP	17 16 25
		i(S)	17 34
		iL	17 42
July 9			
COL		iP	20 06 36
		i	06 47
		iS	07 25
		iL	07 29
July 9			
COL		e(P)	20 26 52
July 9			
EUR		eP	21 42 45
July 10			
COL		eP	02 26 50
EUR		eP	02 26 19
		i	27 03
		ePKKP	42 02
TUC		eP	02 26 17
		i	27 01
TUC-T		eP	02 26 18
		i	27 01
July 10			
BOZ		eP	04 23 21
BUT		eP	04 23 28
COLU		eP	04 21 05
		eS	28 36
EUR		eP	04 23 10
		i	23 21
		i	23 34
HH		eP	04 24 03
RC		iP	04 23 06
SJ		iP	04 18 54
		e	19 22
SLC		eP	04 23 03
TUC		eP	04 22 19
		i	22 32
WASH		eP	04 21 36
		i	22 00
July 10			
COL		i(P)	04 45 32
July 10			
EUR		eP	07 29 23
July 10			
EUR		e(P)	11 54 28
July 10			
COL		eP	14 19 52
July 10			
EUR		eP'	16 13 08
July 10			
COL		e(P)	17 42 35
July 10			
COL		iP	17 51 59
July 10			
COL		iP	18 04 26
EUR		eP	18 05 34
July 10			
COL		iP	20 39 31
July 10			
BOZ		e(P)	20 58 51
COL		iP	20 54 31
		i(S)	55 46
		iL	56 04
EUR		eP	20 58 57
RC		eP	20 59 25
SIT		eP	20 55 06
		e	56 38
July 11			
TUC		eP	00 09 44
		eL	10 36
July 11			
COL		eP	03 19 46
EUR		iP	03 19 48
TUC-T		eP	03 19 55
July 11			
COL		eP	05 04 31
EUR		iP	05 04 40
TUC		eP	05 04 47
TUC-T		eP	05 04 47
July 11			
GUAM		iP	08 40 37
		iS	40 53
July 11			
EUR		eP	09 05 00
July 11			
EUR		eP	09 27 39
RC		eP	09 28 14
July 11			
EUR		eP	09 32 43
July 11			
EUR		eP	10 06 06
July 11			
BOZ		eP'	12 21 54
		e	23 00
BUT		e(P')	12 22 57
COL		eP'	12 21 10
		e	23 54
		ePP	24 11
		ePKS	25 28
		e	27 33
		eSKKS	30 38
		eSKSP	34 41
		eSS	42 32
		eSSS	48 18
		eL	13 01 22
COLU		eP'	12 21 49
EUR		iP'	12 21 53
		i	22 59
		ePP	26 42
		e	30 35
HH		eP'	12 21 49
		i	22 46
		ePP	26 31
		e	27 25
RC		iP'	12 21 54
		i	23 19
		ePP	27 08
SLC		eP'	12 21 54
		e	23 12
SJ		iP'	12 21 23
SIT		iP'	12 21 36
		ePP	25 32
TUC		iP'	12 21 57
		i	23 15
		ePP	27 06
		eSS	49 05
TUC-T		iP'	12 21 56
		i	23 15
		iPP	27 05
July 11			
COL		eP	15 23 15
		i	23 22
RC		eP	15 19 12
TUC-T		iP	15 17 46
		eL	23 28

Date and Station		Phase (GCT)
		h m s
July 11		
EUR	eP	17 19 07
July 11		
EUR	eP	17 27 28
July 11		
EUR	eP	17 38 50
TUC	eP	17 38 09
	i(S)	38 54
	iL	38 56
TUC-T	eP	17 38 07
	eL	38 57
July 11		
BOZ	eP	18 33 50
BUT	eP	18 33 42
COL	iP	18 30 37
	i	30 49
EUR	iP	18 33 57
	i	34 10
HH	eP	18 33 28
RC	iP	18 34 22
	i	34 40
SLC	eP	18 34 07
TUC	iP	18 34 45
TUC-T	iP	18 34 45
	e	35 11
July 11		
COL	iP	19 02 30
	i	02 42
July 11		
EUR	eP	19 19 07
July 11		
EUR	eP	19 36 15
July 11		
COLU	eP	21 27 12
July 11		
COL	e(P)	23 14 04
	i	14 14
EUR	eP	23 17 36
July 12		
COL	eP	00 26 02
	i	26 21
EUR	eP	00 26 48
GUAM	e(P)	00 19 07
July 12		
BOZ	eP	00 36 39
	epP	38 09

Date and Station		Phase (GCT)
		h m s
BUT	eP	00 36 34
	epP	38 02
COL	iP	00 36 29
	ipP	37 57
	iS	46 22
	i	46 36
	epS	48 30
EUR	iP	00 36 07
	eP'P'	01 02 27
GUAM	eP	00 32 40
HONO	eP	00 32 06
HH	eP	00 36 35
	epP	38 04
KIP	iP	00 32 07
	i	32 26
RC	iP	00 36 57
	epP	38 28
SLC	eP	00 36 24
TUC	iP	00 36 07
	epP	37 35
	esP	38 16
TUC-T	iP	00 36 08
	ipP	37 36
	eP'P'	01 02 41
July 12		
EUR	eP	02 18 17
July 12		
EUR	iP	11 12 30
July 12		
EUR	eP	15 39 16
TUC-T	eP	15 38 27
July 12		
EUR	eP	16 40 38
July 12		
COL	eP	17 04 29
RC	eP	17 05 11
July 12		
COL	iP	19 33 06
July 13		
COL	eP	01 47 03
EUR	eP	01 49 13
July 13		
EUR	eP	02 51 48
TUC	eP	02 51 59
TUC-T	iP	02 51 53

Date and Station		Phase (GCT)
		h m s
July 13		
EUR	eP	03 08 05
July 13		
EUR	eP	03 50 39
TUC-T	eP	03 52 18
July 13		
COL	iP	05 24 37
EUR	eP	05 25 13
SJ	e(P)	05 34 13
	e	34 33
July 13		
COL	e(P)	06 29 34
July 13		
EUR	eP	09 04 17
July 13		
BOZ	iP	12 36 20
	e	38 38
	eS	42 16
	eL	46 28
BUT	eP	12 36 10
	ePP	37 38
	eS	42 08
	eL	46 09
COL	iP	12 32 58
	iS	36 29
	iL	38 05
COLU	eP	12 39 27
	eS	48 00
EUR	eP	12 36 23
	i	36 38
	iScP	42 15
GUAM	iP	12 37 52
HH	iP	12 35 54
	ePP	37 24
	iPcP	38 18
	eS	41 35
	eL	44 19
RC	iP	12 37 04
	eS	43 43
	eL	49 40
SLC	iP	12 36 39
	e	37 50
	eS	42 58
	eL	46 14
SJ	iP	12 41 25
	i	41 35
SIT	iP	12 33 42
	eS	37 45
	eL	40 20

Date and Station		Phase (GCT)
		h m s
THULE	iP	12 36 45
	i	37 07
	ePP	38 34
TUC	eP	12 37 25
	iP	37 27
	iPP	39 30
	iS	44 26
	eSS	47 44
	eL	51 06
UK	iP	12 35 47
	e	36 46
	e	37 44
	eL	49 20
WASH	eP	12 39 17
	ePP	42 01
	eS	47 37
	eL	57 19
July 13		
EUR	eP	15 30 36
July 13		
COL	iP	15 37 11
	epP	39 00
EUR	iP	15 36 46
	epP	38 35
GUAM	e(P)	15 33 10
	i	33 12
TUC-T	iP	15 36 44
	epP	38 27
July 13		
EUR	eP	16 24 56
July 13		
COL	e(P)	16 36 45
EUR	eP	16 37 39
July 13		
EUR	eP	18 19 52
July 13		
SJ	eP	18 53 28
	i	53 40
July 13		
EUR	eP	19 47 49
July 14		
COL	eP	00 04 17
COLU	eP	00 10 33
EUR	iP	00 07 27
	i	07 56
	iPcP	09 38
RC	eP	00 08 10
TUC	iP	00 08 28

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Date and Station		Phase	(GCT) h m s
TUC-T		iP	00 08 29
July 14			
COL		iP	03 06 37
EUR		eP	03 07 31
July 14			
BH		iP	05 25 18
		iS	25 31
July 14			
EUR		eP	08 16 48
July 14			
BOZ		eP	08 48 24
		e	48 36
COL		eP	08 45 01
		eS	48 37
		iL	50 20
COLD		eP	08 51 29
		eS	09 00 00
EUR		iP	08 48 27
		i	48 41
HH		e(P)	08 48 04
RC		iP	08 49 08
		e	50 00
SLC		eP	08 48 42
TUC		eP	08 49 29
		i	49 42
TUC-T		iP	08 49 29
WASH		eP	08 51 21
		eL	09 11 58
July 14			
EUR		eP	09 56 37
July 14			
BOZ		eP	11 40 05
BUT		eP	11 39 54
COL		iP	11 36 09
		iS	37 51
		iL	38 38
EUR		iP	11 40 17
		ipP	40 36
		eScP	46 39
HH		e(P)	11 40 02
RC		iP	11 40 50
SLC		eP	11 40 29
SIT		eP	11 36 44
TUC		eP	11 41 26
		iP	41 28
TUC-T		iP	11 41 27
		ipP	41 45
July 14			
BOZ		eP	13 13 31
BUT		eP	13 13 25
COL		iP	13 13 00
		ipP	13 24
EUR		eP	13 13 02
		ePKKP	31 01
GUAM		eP	13 08 03
RC		eP	13 13 52
SLC		eP	13 13 20
TUC		eP	13 13 08
TUC-T		iP	13 13 09
		e	14 24
		e	15 44
July 14			
EUR		iP	16 04 56
July 14			
BOZ		e(P)	16 13 03
EUR		iP	16 13 06
RC		eP	16 13 47
TUC		eP	16 14 08
TUC-T		eP	16 14 09
July 14			
EUR		iP	16 56 10
July 14			
COL		iP	17 33 19
July 14			
EUR		eP	18 04 09
July 14			
COL		iP	18 26 41
EUR		iP	18 26 21
TUC		eP	18 26 22
TUC-T		eP	18 26 22
July 14			
EUR		iP	18 32 11
TUC		eP	18 32 12
TUC-T		iP	18 32 13
July 14			
EUR		eP	18 38 09
July 14			
EUR		eP	19 47 25
July 14			
EUR		eP	20 28 10
July 14			
EUR		eP	20 38 20
July 14			
EUR		eP	21 37 45
July 14			
EUR		eP	21 57 23
July 14			
EUR		eP	22 25 58
July 14			
COL		eP	22 44 27
EUR		iP'	22 50 07
		ePP	51 22
GUAM		eP	22 37 17
SJ		eP'	22 52 05
July 14			
EUR		eP	23 09 37
		e	13 09
July 15			
EUR		eP	00 50 09
		e	51 07
July 15			
EUR		eP	06 51 01
July 15			
COL		e(P)	08 29 30
EUR		eP	08 26 11
		e	27 50
TUC-T		eP	08 27 51
UK		eP	08 24 56
		eL	25 37
July 15			
EUR		eP	08 32 17
July 15			
EUR		eP	08 47 18
July 15			
EUR		eP	09 28 10
		e	30 18
TUC		e(P)	09 26 47
		i	26 56
		eL	27 37
TUC-T		eP	09 26 48
		i	27 03
		eL	27 38
July 15			
COL		eP	15 10 52
July 15			
COL		eP	15 53 20
July 15			
COL		e(P)	16 53 07
July 15			
COL		iP	18 11 19
		i	13 14
July 15			
EUR		eP	19 01 17
		i	01 52
July 15			
EUR		eP	19 41 37
		i	42 38
July 15			
EUR		eP	21 15 07
		i	15 41
July 15			
EUR		eP	22 12 35
July 15			
EUR		eP	22 28 52
July 15			
EUR		eP	22 48 26
		eL	49 10
July 16			
BH		iP	02 35 54
		iS	36 37
July 16			
COL		eP	04 48 40
EUR		iP	04 49 06
		ipP	49 19
July 16			
EUR		e(P)	05 55 52
July 16			
COL		eP	07 03 15
EUR		iP	07 06 48
RC		eP	07 07 28
TUC-T		eP	07 07 53
July 16			
EUR		e(P)	10 13 39
July 16			
COL		eP	10 52 49

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Date and Station		Phase (GCT) h m s
EUR	eP	10 53 19
July 16		
EUR	eP	11 07 35
July 16		
GUAM	iP	12 19 39
	e(S)	20 35
July 16		
BOZ	eP	15 25 31
BUT	eP	15 25 21
COL	iP	15 22 14
	i	22 27
	iS	26 08
	iL	26 32
COLU	eP	15 28 30
EUR	iP	15 25 33
HH	iP	15 25 06
RC	iP	15 26 13
SLC	eP	15 25 49
SJ	eP	15 30 19
SIT	iP	15 23 00
TUC	i(P)	15 26 58
TUC-T	iP	15 26 34
July 16		
COL	eP	16 34 27
EUR	eP	16 30 23
TUC	eP	16 29 04
TUC-T	iP	16 29 03
	e	29 18
July 16		
COL	eP	19 27 07
EUR	iP	19 27 13
GUAM	iP	19 20 45
SJ	eP'	19 33 02
	e	33 11
TUC	eP	19 27 20
TUC-T	eP	19 27 21
	i	27 25
July 16		
COL	iP	21 16 46

Date and Station		Phase (GCT) h m s
EUR	iP	21 20 13
July 16		
EUR	eP	22 15 19
July 16		
EUR	eP	22 41 41
July 16		
EUR	eP	23 00 13
July 17		
EUR	e(P)	01 32 27
July 17		
COL	eP	03 35 12
	i(S)	35 59
	iL	36 06
EUR	eP	03 40 17
July 17		
EUR	iP	07 28 23
	i	29 29
	iL	30 38
RC	eP	07 30 15
TUC	eP	07 27 34
	i	27 49
	i(S)	28 31
	iL	28 33
TUC-T	eP	07 27 35
	e	27 51
	eL	28 41
July 17		
COL	iP	07 47 41
EUR	iP	07 47 12
TUC	eP	07 47 13
TUC-T	iP	07 47 13
July 17		
TUC-T	eP	17 24 47
July 17		
EUR	eP	18 22 00
July 17		
EUR	eP	19 26 06
TUC-T	eP	19 24 52
July 17		
EUR	eP	21 46 44
	epP	47 08
July 17		
EUR	eP	22 05 34
July 17		
BH	eP	22 54 07

Date and Station		Phase (GCT) h m s
COLU	eP	22 58 05
EUR	eP	23 01 13
	i	01 37
RC	eP	23 00 32
SJ	e(P)	22 55 09
	e	55 17
	eS	57 28
	eL	58 31
TUC	eP	23 00 19
July 17		
BOZ	eP	23 27 45
BUT	eP	23 27 35
COL	iP	23 22 45
	iS	23 42
	iL	23 56
EUR	eP	23 27 38
	ipP	28 07
	eScP	34 00
HH	eP	23 27 14
	eScP	33 41
SIT	eP	23 23 52
	eL	25 31
July 18		
EUR	eP	01 14 28
July 18		
COL	e(P)	02 15 03
July 18		
COL	eP	04 04 28
July 18		
COL	iP	07 12 36
	epP	14 47
EUR	eP	07 12 15
	epP	14 27
GUAM	iP	07 08 41
HH	e(P)	07 12 42
TUC	iP	07 12 16
July 18		
EUR	eP	11 17 24
July 18		
BOZ	eP	12 21 51
BUT	eP	12 21 37
	eL	25 09
COL	eP	12 22 41
	eS	26 08
	eL	27 50

Date and Station		Phase (GCT) h m s
EUR	iP	12 22 08
	i	22 15
	i	22 25
	eL	25 41
HH	e(P)	12 21 12
	eL	23 48
RC	iP	12 23 04
	eS	26 45
	eL	30 18
SLC	eP	12 22 25
TUC	iP	12 23 46
	eL	31 52
UK	iP	12 21 34
July 18		
EUR	e(P)	13 09 56
July 18		
EUR	eP	13 20 40
July 18		
SJ	iP	13 48 25
	eL	49 02
July 18		
COL	eP	14 24 53
July 18		
EUR	eP	15 22 53
July 18		
GUAM	iP	19 08 11
July 18		
COL	eP	19 42 01
EUR	iP	19 41 43
	i	42 03
	iPP	44 59
HH	iP	19 42 09
TUC	iP	19 41 45
July 18		
BH	iP'	20 14 29
	iSKKS	24 39
BOZ	eP	20 08 48
	ePKKP	24 45
BUT	eP	20 08 42
	eSKS	19 07
	eSS	27 27
COL	eP	20 06 36
	e	10 44
	iS	16 07
	iScS	17 08
	eSS	21 02
	ePKKP	25 39
	eL	27 02
	eP'P'	33 35

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Date and Station		Phase	(GCT) h m s
COLU		eP'	20 13 50
		ePP	15 42
		eSKS	20 42
		eSKKS	22 26
		e	25 34
EUR		iP	20 08 50
		ipP	09 33
		eP'	12 57
		iPP	13 11
		eSKS	19 12
		iPKKP	24 58
		ipPKKP	25 40
		iSKKP	28 52
		eP'P'	32 38
		iSKPP'	36 43
		eP'P'P'	51 36
GUAM		iP	19 59 59
		ipP	20 00 30
		isP	00 52
		i	02 53
		i(S)	04 21
		iScP	07 08
		iScS	10 42
		eT	21 03
HH		iP	20 08 32
		e	11 57
		iPP	12 37
		eSKS	18 58
		iPS	21 16
		ePKKP	24 50
		eSS	26 34
		eSSS	31 08
		eL	41 34
RC		eP	20 09 09
		eP'	13 35
		ePS	22 43
		ePKKP	24 28
		e	24 41
SLC		eP	20 09 00
		ePP	13 31
SJ		iP'	20 14 24
		i	15 12
SIT		iP	20 07 21
		iPP	10 41
		iS	17 32
TUC		eP'	20 13 24
		iPP	14 02
		iSKS	19 56
		i	20 57
		iPS	23 21
		i	23 38
		ePKKP	24 20
		e	28 23
		eSS	29 04
		eSSS	35 19

Date and Station		Phase	(GCT) h m s
UK		eP	20 08 29
		ePP	12 26
		eSKKS	19 11
		iPS	21 13
		e(PKKP)	25 21
		e(P'P')	33 06
WASH		iP'	20 13 43
		iPP	15 10
		i	17 03
		eSKS	20 24
		i	24 18
		iSS	31 17
July 18			
COL		iP	20 36 28
July 18			
EUR		e(P)	21 22 20
July 18			
EUR		eP	21 58 12
		iP	58 18
		eS	58 52
		eL	58 56
July 19			
COL		iP	00 42 42
July 19			
EUR		eP	01 22 16
July 19			
BOZ		eP'	04 01 18
BUT		eP'	04 01 12
COL		eP	03 56 04
		e(P')	59 29
		ePP	04 00 16
COLU		eP'	04 01 56
EUR		iP'	04 01 17
		i	01 39
GUAM		eP	03 50 12
HH		iP'	04 01 10
TUC		eP'	04 01 34
		ePP	04 23
		ePKS	05 02
WASH		iP'	04 01 49
July 19			
EUR		eP	04 13 59
July 19			
EUR		eP	05 16 44
July 19			
COL		eP	05 55 02
		e(S)	56 56
		eL	57 04

Date and Station		Phase	(GCT) h m s
July 19			
EUR		iP	07 12 35
		iS	12 57
		iL	13 00
July 19			
COL		iP	12 06 30
		iS	07 21
		iL	07 33
July 19			
COL		eP	13 57 04
		epP	59 03
EUR		eP	13 56 37
		epP	58 33
TUC		iP	13 56 43
		epP	58 39
July 19			
EUR		eP	14 27 07
July 19			
BH		iP	15 11 28D
BOZ		iP	15 17 11C
		ePcP	17 27
		epP	18 01
		e	19 10
		iS	26 11
		eL	35 29
BUT		iP	15 17 15D
		ipP	18 02
		eS	26 20
		e(SSS)	34 56
		eL	36 12
COL		iP	15 19 28D
		ipP	20 21
		i	23 25
		iPP	23 38
		iSKS	29 50
		iS	30 30
		ipS	31 24
		ePS	32 12
		i	35 22
		ePKKP	36 01
		e	36 26
		eSSS	41 26
		eP'P'	44 12
COLU		eP	15 14 47C
		eS	21 34
EUR		iP	15 16 58D
		ipP	17 48
		iPP	19 30
		iPPP	21 35
		iS	25 52
		isS	26 37
		iPKKP	35 44
GUAM		iP'	15 25 29D
		iPP	28 50

Date and Station		Phase	(GCT) h m s
HH		iP	15 17 28D
		ipP	18 20
		iPP	20 12
		esPP	21 29
		iS	26 33
		i	27 18
		e	33 28
		eL	36 52
		ePKKP	37 52
		eP'P'	44 51
RC		iP	15 16 40D
		e	20 53
		iS	25 09
		e	28 11
		eP'P'	45 05
SLC		iP	15 16 49D
		epP	17 30
		esP	18 05
		eS	25 33
SJ		eP	15 12 34C
		iP	12 36D
		ePcP	15 24
		eS	17 40
		iScP	18 37
		eL	21 24
SIT		eP	15 18 52
		ePP	22 26
		i(SS)	31 36
THULE		eP	15 18 56D
TUC		iP	15 16 07D
		iPP	16 59
		iS	24 10
		eL	30 31
UK		iP	15 17 23D
		ipP	18 15
		iS	26 36
		eP'P'	45 03
		e	46 07
WASH		iP	15 15 17D
		ipP	16 04
		i	16 41
		iPP	17 30
		iScP	20 00
		e(S)	22 14
July 19			
BOZ		eP	15 45 03
COL		iP	15 49 36
COLU		eP	15 45 55
HH		iP	15 47 36
RC		iP	15 46 47
SLC		eP	15 45 10

Date and Station	Phase (GCT)
	h m s
SJ eP	15 42 41
epP	43 51
iPcP	45 20
TUC eP	15 45 22
i	45 32
WASH iP	15 45 22
iPP	46 45
eScP	49 49
July 19	
COL e(P)	15 53 26
July 19	
COL eP	16 02 09
July 19	
EUR eP	17 51 18
eL	54 08
TUC eP	17 49 51
e	49 57
i	50 03
eL	50 49
July 19	
EUR eP	22 10 43
July 19	
COL eP	22 24 25
EUR iP	22 27 59
July 20	
EUR eP	00 58 46
July 20	
EUR iP	02 50 54
BOZ eP'	02 59 15
ePP	03 01 10
e	02 01
BUT iP'	02 59 11
COL eP	02 54 00
epP	55 52
iPP	58 05
iSKS	03 03 46
i	04 19
iS	04 47
eSP	06 28
epS	07 10
iPKKP	10 17
i	10 46
eSS	12 11
e	14 37
eP'P'	18 27
COLU eP'	02 59 57
epP'	03 03 00
epPP	05 26
EUR e(P')	02 59 01
iP'	59 14
ePP	03 01 12

Date and Station	Phase (GCT)
	h m s
EUR ePPP	02 02
iPKKP	08 50
iSKKP	12 11
i	12 34
GUAM iP	02 47 45
e	52 52
i(ScP)	52 59
iScS	56 56
HH iP'	02 59 08
ePP	03 00 41
i	01 55
e(SKKS)	06 57
iPKKP	09 03
iSKKP	12 02
i	12 40
RC iP'	02 59 25
iPP	03 02 01
SLC eP'	02 59 18
SJ i(P')	02 59 43
iP'	03 00 06
ePP	05 15
epPP	07 07
ePPP	09 47
SIT eIP	02 59 07
TUC iP'	02 59 28
e	03 00 15
epP'	01 29
iPP	02 09
e	06 10
TUC-T eP'	02 59 13
iP'	59 29
epP'	03 01 29
iPP	02 09
eSKKP	11 28
UK iP	02 59 04
i	03 01 51
July 20	
WASH iP'	02 59 50
ipP'	03 01 50
isP'	02 36
ipPP	05 01
i	09 16
iPS	14 06
July 20	
EUR iP	03 08 51
July 20	
RC eP	08 21 27
July 20	
COL iP	09 18 57
e	19 23
EUR iP	09 18 26
TUC eP	09 18 28

Date and Station	Phase (GCT)
	h m s
TUC-T eP	09 18 28
July 20	
COL iP	11 27 28
July 20	
EUR iP	11 43 25
iL	45 10
TUC e(P)	11 43 06
e	43 25
eL	44 38
TUC-T e(P)	11 43 07
e	43 30
eL	44 44
July 20	
COL eP	12 21 43
i	21 56
July 20	
COL eP	13 40 02
i	40 13
EUR eP	13 39 29
TUC-T eP	13 39 33
July 20	
EUR e(P)	16 41 10
July 20	
COL iP	17 05 47
ipP	07 54
eSKS	15 29
eS	16 01
esS	19 59
EUR iP	17 05 27
ipP	07 31
ePP	09 02
GUAM iP	17 01 44
e(S)	08 12
HH e(P)	17 05 54
ePP	09 44
TUC iP	17 05 28
epP	07 31
TUC-T eP	17 05 28
epP	07 31
July 20	
EUR eP	18 38 28
HH eP	18 38 30
July 20	
COL eP	19 50 50
i	51 49
RC eP	19 49 12

Date and Station	Phase (GCT)
	h m s
July 20	
EUR eP	20 55 39
July 20	
COL eP	21 44 42
July 20	
EUR eP	22 51 09
July 20	
COL eP	23 10 58
July 20	
SJ eP	23 44 11
i	44 25
eL	44 41
July 20	
EUR iP	23 58 34
July 21	
EUR iP	00 37 30
iPP	37 37
iS	38 02
iL	38 16
July 21	
EUR eP	00 46 45
July 21	
COL eP	00 56 23
EUR eP	00 57 21
GUAM eP	00 49 06
July 21	
EUR eP	01 17 45
July 21	
COL iP	01 45 37
EUR eP	01 46 35
July 21	
COL iP	06 17 14
EUR iP	06 20 37
July 21	
BOZ eP	07 56 35
BUT eP	07 56 29
COL iP	07 55 52
i	56 32
eS	08 06 19
eScS	06 45
eL	22 35
EUR e	07 56 09
i	57 20
ePP	59 38
GUAM iP	07 50 17

Date and Station		Phase (GCT)
		h m s
July 21		
EUR	iP	00 37 30
	iP	37 37
	iS	38 02
	iL	38 16
July 21		
EUR	eP	00 46 45
July 21		
COL	eP	00 56 23
EUR	eP	00 57 21
GUAM	eP	00 49 06
July 21		
EUR	eP	01 17 45
July 21		
COL	iP	01 45 37
EUR	eP	01 46 35
July 21		
COL	iP	06 17 14
EUR	iP	06 20 37
July 21		
BOZ	eP	07 56 35
BUT	eP	07 56 29
COL	iP	07 55 52
	i	56 32
	eS	08 06 19
	eSeS	06 45
	eL	22 35
EUR	e	07 56 09
	i	57 20
	ePP	59 38
GUAM	iP	07 50 17
HH	iP	07 56 28
SLC	eP	07 56 26
SJ	eP'	08 02 19
SIT	eP	07 55 52
TUC	iP	07 56 18
UK	iP	07 55 42
July 21		
EUR	eP	08 21 59
HH	eP	08 21 50
July 21		
BH	iP	09 21 24
	i(S)	26 15
BOZ	eP	09 26 05

Date and Station		Phase (GCT)
		h m s
BUT	eP	09 26 11
COL	iP	09 28 54
	eS	37 55
	eL	50 53
COLU	eP	09 22 13
	e(S)	25 20
EUR	iP	09 26 15
	i	26 33
	iPP	28 00
HH	iP	09 26 25
	i	26 38
	e	31 44
RC	eP	09 25 14
	e	26 37
SLC	eP	09 25 56
SJ	iP	09 18 26
	iS	18 50
	iL	19 15
TUC	iP	09 25 33
	iPP	27 13
	iL	28 20
WASH	eP	09 22 41
	iS	26 21
	eL	28 35
July 21		
BH	iP	12 33 38
BOZ	eP	12 35 35
	eS	40 56
BUT	eP	12 35 40
	e(S)	39 56
	eL	45 46
COL	eP	12 39 11
	iP	39 12
	iPcP	40 00
	eS	47 22
	e	48 57
	eSS	51 15
	eL	57 37
COLU	eP	12 34 22
	eS	38 42
EUR	eP	12 35 04
	i	35 31
	eS	40 12
	iL	47 04
HH	iP	12 36 03
	ePP	37 23
	eS	41 10
	eL	47 43
RC	iP	12 35 05
	eL	43 04

Date and Station		Phase (GCT)
		h m s
SLC	eP	12 34 59
	e(S)	39 45
	eL	44 17
TUC	iP	12 33 45
	i	35 15
	eS	37 29
	iL	39 25
WASH	iP	12 35 14
	eS	40 17
	e	41 47
	eL	45 19
July 21		
BH	iP	13 08 00
BOZ	eP	13 09 59
BUT	eP	13 10 04
COL	iP	13 13 34
COLU	eP	13 08 43
	eS	13 06
EUR	eP	13 09 27
	e(PP)	11 03
HH	iP	13 10 25
	e	14 47
RC	eP	13 07 17
	i	09 28
SLC	eP	13 09 21
TUC	iP	13 08 08
	eL	14 05
July 21		
COL	iP	13 17 55
EUR	eP	13 13 49
	eL	18 42
TUC	eP	13 12 31
July 21		
EUR	eP	16 28 30
July 21		
EUR	i(P)	17 31 02
July 21		
BOZ	eP	17 41 50
	eS	45 05
BUT	eP	17 41 47
COL	eP	17 46 24
	i	46 29
	i	46 42
COLU	eL	17 52 55
EUR	iP	17 40 31
	iL	41 32

Date and Station		Phase (GCT)
		h m s
HH	iP	17 42 21
	eL	45 35
RC	eP	17 41 55
	i	42 27
	eL	44 04
SLC	eP	17 40 33
	eS	41 32
	eL	42 00
TUC	iP	17 40 42
	i	40 54
	iS	41 47
UK	e(P)	17 42 17
	eL	44 20
WASH	eL	17 53 55
July 21		
EUR	eP	21 42 20
	eL	44 00
July 21		
EUR	eP	23 21 25
July 22		
EUR	eP	03 07 17
	e	07 57
	eL	08 19
HH	eP	03 08 08
RC	eP	03 07 45
July 22		
BOZ	eP	04 58 02
BUT	eP	04 58 07
COL	iP	05 01 36
COLU	eP	04 56 45
	eS	05 01 12
EUR	eP	04 57 30
	iPP	59 13
	eL	05 06 45
HH	eP	04 58 28
	eL	05 10 43
RC	eP	04 57 33
	eL	05 07 00
SLC	eP	04 57 25
TUC	eP	04 56 09
	i	56 13
	eL	05 02 06
WASH	e(P)	04 57 36
July 22		
GUAM	iP	05 37 39
	iS	38 01

Date and Station		Phase (GCT) h m s
July 22		
EUR	eP	07 16 11
TUC	eP	07 14 53
July 22		
EUR	eP	09 32 49
July 22		
COL	iP	11 28 16
	ePP	31 37
EUR	iP'	11 34 08
	e	34 34
	iPKKP	45 23
GUAM	iP	11 20 25
	iPP	20 47
	iS	24 16
HH	eP'	11 33 36
RC	eP'	11 34 19
SJ	e(P')	11 35 45
TUC	eP'	11 34 21
WASH	eP'	11 34 53
July 22		
GUAM	iP	12 50 59
	iS	51 12
July 22		
BH	iP	15 58 27
BOZ	eP	16 00 26
	eS	05 38
	eL	11 28
BUT	eP	16 00 31
	eL	11 26
COL	eP	16 03 59
COLU	eP	15 59 18
	e(S)	16 03 34
EUR	iP	15 59 53
	e	16 02 07
	eL	09 01
HH	eP	16 00 54
	eL	13 13
RC	eP	15 59 56
	eL	16 09 19
SLC	eP	15 59 50
TUC	eP	15 58 33
	i	58 52
	eL	16 04 22
July 22		
COL	eP	16 22 00

Date and Station		Phase (GCT) h m s
July 22		
COL	eP	16 50 17
EUR	eP	16 49 41
TUC	eP	16 49 37
TUC-T	iP	16 49 37
	i	49 53
July 22		
TUC-T	iP	17 40 41
July 22		
BOZ	eP	19 33 17
	eS	40 34
BUT	eP	19 33 11
	eS	40 20
COL	iP	19 29 53
	ipP	31 56
	isP	32 33
	iS	34 18
	iScP	35 07
	i	35 31
	i	35 44
	eL	37 27
	eScS	39 08
	e	42 10
COLU	eP	19 35 32
	eScS	44 50
EUR	iP	19 33 31
	i	34 54
	isP	35 31
	iSP	36 25
	iScP	37 00
	eS	41 04
GUAM	iP	19 30 58
	ipP	32 48
	iS	36 15
	iScS	39 53
HH	iP	19 32 54
	iPcP	33 46
	ePP	35 11
	iScP	36 43
	e	39 13
	eS	39 52
	eScS	41 37
	eP'P'	20 02 49
RC	iP	19 33 49
	epP	35 51
	eS	41 35
	eP'P'	20 02 34
SLC	eP	19 33 33
	epP	35 38
SIT	iP	19 31 01
	epP	32 54
	ePP	33 08
	eScP	35 38

Date and Station		Phase (GCT) h m s
TUC	iP	19 34 21
	epP	36 28
	eS	42 36
	eP'P'	20 02 24
TUC-T	iP	19 34 21
	e	34 42
	ipP	36 28
	iPP	37 02
	iS	42 37
	eP'P'	20 02 18
	i	04 44
UK	eP	19 33 05
	iP	33 06
	ipP	35 05
WASH	iP	19 35 17
	ipP	37 29
	eS	44 18
July 22		
COL	eP	19 39 44
	i	39 51
EUR	eP	19 43 34
	e	45 23
HH	eP	19 42 51
	i	43 34
TUC	eP	19 44 17
TUC-T	iP	19 44 18
July 22		
COL	iP	20 01 11
EUR	eP	20 02 02
	eL	05 14
July 22		
EUR	iP	21 19 23
July 22		
BOZ	eP	23 16 04
	e(SKKS)	26 44
BUT	eP	23 15 56
	eSKKS	26 38
COL	iP	23 14 46
	ePP	18 13
	eS	25 00
	iS	25 06
	ePS	25 52
	eSS	30 49
	eSSS	34 24
COLU	eP	23 21 23
EUR	iP	23 15 46
	ipP	16 18
	ePP	19 38
	eS	26 37
	ePKKP	33 00
	eSKPP'	44 21
	eL	48 04

Date and Station		Phase (GCT) h m s
GUAM	iP	23 07 02C
	i	11 21
	iScP	14 51
	iScS	18 32
HH	iP	23 15 53
	ePP	19 46
	eSKS	26 34
	ePS	28 39
	eP'P'	40 53
	eL	46 55
RC	eP	23 16 29
	ePP	20 43
SJ	iP'	23 21 57
	iSKP	25 36
SIT	iP	23 15 02
TUC	e(P)	23 16 29
	ePP	20 03
	eL	41 32
TUC-T	iP	23 16 07
	epP	16 21
	iPP	20 03
	ePKKP	32 52
	e	33 19
UK	eP	23 15 21
	e	18 49
	eL	45 10
WASH	eP'	23 21 24
	i	23 06
	eL	24 02 16
July 23		
COL	iP	00 17 11
EUR	iP	00 18 11
July 23		
COL	iP	00 30 05
GUAM	e(P)	00 21 51
	i	22 26
July 23		
COL	iP	00 51 22
July 23		
COL	eP	02 20 51
GUAM	e(P)	02 13 20
July 23		
EUR	iP	03 22 28
	i	22 49
	iL	24 00
July 23		
BH	iP	03 49 55C
BUT	eP	03 57 30

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Date and Station		Phase (GCT)
		h m s
COL	eP	04 00 18
COLU	eP	03 54 33
EUR	iP	03 57 16
	iPP	59 11
HH	iP	03 58 47
RC	iP	03 56 45
	epP	57 41
SJ	iP	03 52 25
	e	52 40
	e	53 38
TUC	iP	03 56 17
	epP	56 49
TUC-T	iP	03 56 17
	e	04 01 07
WASH	iP	03 55 11
July 23		
COL	eP	04 36 50
RC	eP	04 33 17
SJ	eP	04 28 53
TUC	eP	04 32 46
TUC-T	eP	04 32 46
	i	32 50
July 23		
COL	iP	04 51 43
July 23		
COL	iP	05 32 40
July 23		
GUAM	iP	07 32 54
	iS	33 10
July 23		
BOZ	eP	08 17 37
BUT	eP	08 17 21
COL	iP	08 20 31
EUR	iP	08 17 15
	i	17 36
	e	22 20
HH	iP	08 17 16
	e(S)	19 08
	iL	19 36
RC	eP	08 18 53
	e	22 02
TUC	eP	08 19 03
	i	19 07

Date and Station		Phase (GCT)
		h m s
TUC-T	eP	08 19 03
	e	20 27
	eL	23 25
UK	e(P)	08 17 09
July 23		
COL	eP	08 26 40
EUR	eP	08 24 14
July 23		
COL	iP	13 54 07
EUR	iP	13 57 09
	ipP	57 42
HH	iP	13 56 43
RC	eP	13 57 32
TUC-T	iP	13 57 51
July 23		
BOZ	eP	15 09 52
BUT	eP	15 09 46
COL	iP	15 09 50
	ipP	10 08
	isP	10 22
	iS	20 48
	ipS	21 16
	esPS	22 31
	eL	39 38
EUR	iP	15 09 20
	ipP	09 50
	ePKKP	28 07
GUAM	iP	15 06 03
	iPcP	07 06
	eS	13 25
HH	eP	15 09 49
	epP	10 10
	ePP	13 25
RC	eP	15 10 10
	epP	10 30
SLC	eP	15 09 37
TUC	iP	15 09 18
	epP	09 39
TUC-T	iP	15 09 18
	e	10 27
	ePS	22 37
	ePKKP	27 28
UK	eP	15 08 57
	epP	09 16
July 23		
COL	eP	15 19 59

Date and Station		Phase (GCT)
		h m s
July 23		
COL	eP	18 32 48
EUR	eP	18 28 43
TUC	eP	18 27 24
	eL	33 30
TUC-T	eP	18 27 23
	iL	33 28
July 23		
EUR	iP	19 47 13
July 23		
COL	iP	21 36 31
EUR	iP	21 39 01
GUAM	iP	21 30 32
HH	iP	21 38 43
	i	38 56
July 24		
BOZ	eP	01 25 54
BUT	eP	01 25 42
	eS	27 40
	eL	30 04
COL	iP	01 28 55
	eS	33 34
	iL	35 01
COLU	eP	01 30 09
	eS	35 44
	eL	41 26
EUR	eP	01 24 59
	iP	25 00
	i	25 39
	e(S)	26 22
	iL	26 34
HONO	eP	01 29 59
	eS	35 08
	i	35 40
	eL	37 02
HH	eP	01 25 44
	eL	28 10
KIP	eP	01 29 55
RC	iP	01 27 01
	eL	30 31
SLC	eP	01 25 40
	eS	27 12
	eL	28 44
SJ	iP	01 32 44
SIT	iP	01 27 16
	e(S)	30 46
	eL	32 46

Date and Station		Phase (GCT)
		h m s
TUC	iP	01 26 41
	iS	29 40
	iL	30 35
TUC-T	iP	01 26 40
UK	iP	01 23 49
	eL	24 22
WASH	eP	01 30 20
	eS	36 22
	eL	39 32
July 24		
COL	i(P)	01 32 25
RC	eP	01 30 15
July 24		
EUR	eP	01 53 05
July 24		
COL	eP	02 16 18
July 24		
COL	ip	02 52 30
EUR	eP	02 55 45
HH	iP	02 55 18
RC	eP	02 56 10
July 24		
BUT	eP	03 38 26
COL	eP	03 41 38
HH	eP	03 38 34
	eL	41 06
RC	eP	03 39 44
SLC	eP	03 38 24
TUC	e(P)	03 39 24
	eL	45 06
TUC-T	eP	03 39 31
	e	40 40
UK	eP	03 36 33
	eL	37 14
July 24		
EUR	iP	05 25 15
	ipP	25 43
HH	iP	05 24 46
	i	25 14
SJ	iP	05 20 02
TUC	eP	05 23 26
TUC-T	iP	05 23 26
	e	23 52

Date and Station		Phase (GCT) h m s
July 24		
EUR	eP	06 00 12
TUC-T	eP	05 59 04
July 24		
EUR	e(P)	06 19 06
July 24		
COL	eP	06 31 53
EUR	iP	06 28 42
July 24		
COL	eP	06 52 15
July 24		
COL	iP	07 32 10
July 24		
BH	iP	13 06 12
EUR	eP	13 13 05
RC	eP	13 12 41
SJ	e(P)	13 07 37
	iP	07 43
	i	09 57
TUC-T	eP	13 12 23
July 24		
COL	eP	16 29 33
	i	29 54
	i	30 16
GUAM	eP	16 25 12
July 24		
COL	iP	16 41 15
EUR	eP	16 47 11
July 24		
EUR	eP	19 09 15
July 24		
COL	iP	19 32 27
EIR	iP	19 33 27
GUAM	iP	19 24 45
July 24		
BUT	eP'	23 22 06
COL	iP'	23 22 50
	i	22 57
	eP'P'	43 13
	i	43 21
EUR	eP'	23 22 01
	ePP	23 35
	ePKKP	32 04
	epPKKP	32 33
HH	iP'	23 22 10
	i	22 40
	ePP	24 33
	i	25 19
RC	eP'	23 23 14
SJ	eP	23 15 24
	e	16 04
THULE	eP'	23 22 27
TUC	eP'	23 21 45
	ePP	22 39
TUC-T	eP'	23 21 44
	ePP	22 38
	e	23 07
July 25		
TUC-T	e(P)	01 40 15
	e	40 27
	ePcP	41 33
July 25		
TUC	e(P)	05 36 39
	e	37 41
TUC-T	eP	05 37 42
July 25		
BH	iP	06 12 30
	eS	13 16
July 25		
EUR	eP	06 20 17
July 25		
EUR	eP	07 15 47
TUC	eP	07 13 56
	i	14 12
	iS	15 07
	iL	15 08
TUC-T	e(P)	07 13 58
	i	14 13
	iL	15 10
July 25		
TUC	e(P)	08 41 56
July 25		
EUR	iP	09 00 53
July 25		
COL	eP	12 22 26
HH	eP	12 21 48
July 25		
COL	iP	16 06 09
EUR	eP	16 09 47
July 25		
COL	iP	16 37 13
EUR	eP	16 39 09
July 25		
EUR	eP	17 07 51
July 25		
COL	iP	18 18 21
	i	18 31
EUR	iP	18 16 36
SJ	e(P)	18 09 59
	e	10 03
	e	13 00
TUC	eP	18 16 07
	i	16 15
TUC-T	eP	18 16 05
	i	16 14
July 25		
COL	eP	18 33 18
	iP	33 21
July 25		
COL	eP	19 31 16
	eS	40 08
	eL	44 35
EUR	iP	19 34 54
HH	eP	19 34 18
RC	eP	19 35 12
TUC-T	eP	19 35 45
July 25		
BOZ	eP	21 32 12
BUT	eP	21 32 06
COL	iP	21 29 19
	ipP	29 41
EUR	iP	21 32 17
	ipP	32 41
HH	iP	21 31 53
RC	eP	21 32 40
	epP	33 12
SLC	eP	21 32 27
TUC	eP	21 32 58
TUC-T	iP	21 32 58
July 26		
BH	iP	02 05 24D
July 26		
COL	eP	03 36 36
July 26		
UK	eP	04 49 58
July 26		
TUC-T	e(P)	05 59 47
July 26		
SJ	iP	07 33 23
	iS	34 18
July 26		
GUAM	eP	08 02 24
	iS	02 47
July 26		
EUR	eP	09 45 50
SJ	e(P)	09 38 24
	eP	38 27
	iS	39 48
July 26		
EUR	eP	12 40 24
July 26		
EUR	eP	14 14 07
TUC	eP	14 15 10
TUC-T	eP	14 15 10
July 26		
TUC	eP	15 29 41
July 26		
EUR	eP	15 34 46
July 26		
EUR	eP	17 01 03
July 26		
BOZ	eP	17 19 54
COL	iP	17 18 44
	i	18 52
EUR	eP	17 20 15
HH	iP	17 19 40
RC	eP	17 19 54
July 26		
COL	eP	19 06 44
July 26		
COL	iP	19 43 37
	i	43 47
EUR	iP	19 47 24
	i	47 34

Date and Station		Phase	(GCT) h m s
HH		e(P)	19 47 36
RC		eP	19 47 48
		i	47 59
TUC		eP	19 48 31
TUC-T		e(P)	19 48 33
		e	48 47
July 26			
COL		i(P)	23 08 50
July 27			
BUT		e(P)	05 36 11
COL		iP	05 39 09
EUR		iP	05 35 26
HH		eP	05 36 32
RC		eP	05 35 49
TUC		eP	05 34 12
		i	34 14
July 27			
BOZ		eP	06 35 31
EUR		iP	06 34 47
HH		eP	06 35 58
RC		e(P)	06 35 20
		e	35 31
TUC		eP	06 33 34
July 27			
EUR		iP	11 21 24
July 27			
COL		iP	15 11 30
July 27			
EUR		e(P)	18 45 45
July 28			
TUC		eP	01 25 30
July 28			
RC		eP	03 03 40
July 28			
COL		eP	03 45 07
COLU		e(P)	03 39 12
EUR		iP	03 42 17
TUC		eP	03 41 22
July 28			
EUR		iP	07 55 21
		i	55 31
RC		eP	07 55 44
July 28			
EUR		eP	08 36 28
July 28			
TUC		e(P)	11 20 24
		e	20 28
		eL	21 38
July 28			
SJ		eP	13 17 18
		e	17 36
		eL	18 12
July 28			
SJ		eP	14 14 08
		iL	14 44
July 28			
COL		iP	17 20 30
EUR		e(P)	17 26 09
HH		eP	17 25 13
July 28			
EUR		eP	17 44 15
TUC		eP	17 42 44
July 28			
EUR		eP	21 56 44
July 28			
COL		e(P)	23 29 37
July 29			
COL		iP	00 42 35
		epP	44 53
EUR		iP	00 42 14
TUC		eP	00 42 15
July 29			
EUR		iP	01 44 01
July 29			
EUR		eP	03 02 41
HH		e(P)	03 01 48
		e	04 45
		eL	05 24
TUC		eP	03 04 20
July 29			
COL		e(P)	04 02 17
July 29			
EUR		eP	06 29 20
July 29			
COL		eP	07 40 46
July 29			
EUR		eP	12 38 44
		i	38 50
July 29			
EUR		eP	16 50 03
July 29			
EUR		eP	18 41 28
July 29			
TUC		eP	18 59 46
		eL	19 00 36
July 29			
COL		eP	19 06 25
HH		eP	19 11 06
July 29			
SJ		iP	19 48 05
		iL	48 31
July 29			
EUR		eP	20 16 14
July 29			
HH		iP	20 46 04
July 29			
HH		iP	21 06 05
July 29			
EUR		iP	21 30 36
		i	30 55
		eS	31 56
		eL	32 02
July 29			
SJ		eP	23 13 28
		iP	13 29
July 30			
EUR		eP	02 23 45
July 30			
HH		eP'	06 31 56
		i	32 02
HH		e(P)	07 22 17
July 30			
COL		eP	12 06 19
EUR		iP	12 09 47
		i	09 59
HH		eP	12 09 15
RC		eP	12 10 27
TUC		eP	12 10 47
July 30			
COL		eP	13 07 40
EUR		iP	13 07 07
KIP		eP	13 03 47
TUC		eP	13 07 03
		e	07 19
July 30			
HH		e(P)	14 18 44
July 30			
HH		e(P)	14 55 13
SJ		eP	14 54 43
		eS	56 06
July 30			
COL		iP	16 57 17
		i	58 03
July 30			
COL		eP	17 10 49
July 31			
EUR		eP	00 00 15
July 31			
EUR		iP	02 02 44
HH		eP	02 03 15
SJ		eP	01 58 26
		iP	58 30
TUC		eP	02 01 51
July 31			
COL		iP	05 11 48
		i	12 11
EUR		eP	05 12 48
GUAM		eP	05 04 05
July 31			
HH		e(P)	05 29 45
July 31			
COL		e(P)	06 11 16
EUR		iP	06 10 48
July 31			
COL		eP	10 39 50
		e	42 35
July 31			
EUR		iP	10 54 53
July 31			
RC		eP	12 15 52
TUC		eP	12 15 20
July 31			
COL		e(P)	12 33 18

Date and Station		Phase (GCT)	Date and Station		Phase (GCT)	Date and Station		Phase (GCT)	Date and Station		Phase (GCT)
		h m s			h m s			h m s			h m s
July 31											
COL	iP	15 37 00									
July 31											
EUR	iP	12 16 09									
HH	i(P)	12 16 37									
July 31											
COL	iP	17 58 38									
	i(S)	59 36									
	eL	18 00 22									
July 31											
COL	iP	18 15 32									
	i(S)	16 40									
	iL	16 50									
July 31											
COL	iP	18 33 09									
EUR	eP	18 36 12									
HH	i(P)	18 35 34									
July 31											
COL	eP	18 47 37									
EUR	iP	18 48 33									
July 31											
BOZ	eP	20 06 32									
COL	iP	20 04 30									
EUR	eP	20 07 01									
HH	e(P)	20 06 20									
RC	eP	20 06 38									
THULE	iP	20 03 25									
July 31											
EUR	iP	22 58 14									

Date and Station	Phase (GCT)
	h m s
Local and Minor Earthquakes	
July	
COL	
1	08.3
3	02.0
	22.2
5	22.8
6	21.7
7	09.7
9	01.4
	12.4
12	11.6
13	03.3
	10.6
14	01.3
	22.9
16	06.4
	11.4
17	00.4
	03.5
	19.4
	20.8
18	13.3
	18.5
19	01.9
	21.5
20	00.6
	03.8
	15.3
22	15.5
24	04.8
	05.4
	13.4
25	08.3
	23.9
26	07.8
31	18.3
July	
EUR	
8	15.4
12	09.2
14	15.6
15	04.4
16	01.1
	01.6
	02.0
	02.6
	10.5
	14.1
	14.2
	17.3
	18.8
	19.3
17	15.0
	17.8
18	07.0
	13.6
20	04.6
	16.3
	21.3
21	05.3
22	15.3
23	16.9
26	08.0

Date and Station	Phase (GCT)
	h m s
EUR	
27	01.2
28	11.3
30	03.1
July	
HONO	
2	01.9
10	01.7(2)
	01.8
	02.2(2)
28	21.5
31	01.7
July	
KIP	
2	01.9
10	01.7(2)
	01.8
	02.2(2)
11	00.5
	00.8
28	21.5
31	01.7
July	
RC	
4	06.6
July	
SJ	
1	02.0
	02.1
	03.2
	03.2
	03.6
2	11.5
6	21.5
15	14.6
17	01.3
18	13.9
	17.5
19	06.4
	11.5
20	01.8
	17.7
	23.9
21	02.1
	05.4
	09.8
	11.4
22	01.1
	01.4
	08.9
24	00.5
	06.2
25	16.5
27	22.6
29	05.4
	07.9
	09.8
	20.2
	23.7
31	06.5
July	
SIT	
12	05.0

Date and Station	Phase (GCT)
	h m s
SIT	
18	13.3
July	
TUC	
1	01.9
	18.8
	23.8
7	03.8
	05.0
	05.1
8	09.4
9	04.8
10	11.6
17	09.3
19	18.4
	18.5
	18.7
	20.2
	21.1
	23.6
21	00.4
	00.6
22	09.8
	10.3
23	03.4
26	22.2
27	12.6
29	15.3
30	07.8
July	
UK	
21	19.7
29	03.6

Date and Station	Phase (GCT)
	h m s