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LASA TRAVEL-TIME ANOMALIES FOR 65 REGIONS COMPUTED WITH THE HERRIN TRAVEL-TIME TABLE, NOVEMBER 1966 VERSION

10 January 1968

Prepared For

AIR FORCE TECHNICAL APPLICATIONS CENTER
Washington, D. C.

By

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TELEDYNE INC.

Under

Project VELA UNIFORM

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LASA TRAVEL-TIME ANOMALIES FOR 65 REGIONS COMPUTED WITH THE HERRIN TRAVEL-TIME TABLE, NOVEMBER 1966 VERSION

SEISMIC DATA LABORATORY REPORT NO. 204

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ABSTRACT

Travel-time anomalies at LASA, computed from 626 teleseisms with the November 1966 Herrin tables, are separated into various regions and then averaged. Several observations are made concerning the results.

INTRODUCTION

This report presents the results of computing P-wave relative travel-time anomalies at all subarray center instruments at the Large Aperture Seismic Array (LASA) in Montana. The travel-time table used for computing expected times is the Herrin, November 1966 version.

A total of 626 teleseisms are used. As the anomalies are dependent upon event distance and azimuth, all of the results are separated into groups such that the subarrays have anomalies which are consistent within each defined region.

The following description explains the presentation of the results in the Appendix with these reference numbers appearing on the first page therein:

1. Source of expected travel times. In this report, the Herrin table, November 1966 version, is used;

2. Reference subarray, R, selected for computing relative anomalies. In this report, all anomalies are relative to subarray A0. The following relation may be used to change reference stations;

$$A_{i/j} = A_{i/r} - A_{j/r}$$

where $A_{i/j}$ is the anomaly at station i relative to a new reference station j.

3. All expected travel-times in this report have been corrected for the ellipticity of the earth such that the computed anomalies may be used in conjunction with other programs requiring these corrections.

4. An arbitrary geographic name given to the event region.

5. Range of epicentral distance in the event region.

6. Range of epicentral azimuth in the event region.

7. Date and arbitrary name given to each event.

8. Epicentral distance, in kilometers, from the reference subarray, R.

9. Epicentral azimuth, in degrees measured from north to east, from the reference subarray, R.

10. Subarray designator, i.

11. Measured travel-time anomaly, in seconds, at subarray i relative to subarray R for the kth event;

$$A^k_{i/r} = T^k_i - T^k_r - H^k_i + H^k_r$$

where T is the observed arrival time and H is the expected (Herrin 1966) travel time from the hypocenter of the kth event including correction for ellipticities but <u>not</u> for station elevations.

12. A fixed-point zero anomaly indicates that no reading was made at the subarray for that event.

13. The average anomaly at subarray i of N recorded events;

$$\bar{A}_{i/r} = \left(\sum_{k=1}^{N} A^k_{i/r} \right) / N$$

for the defined region.

14. Standard deviation, or error of estimate, at the ith subarray for N observations:

$$\sigma_i = \left\{ \left[\sum_{k=1}^{N} (A^k_{i/r} - \bar{A}_{i/r})^2 \right] / (N-1) \right\}^{\frac{1}{2}}$$

for the defined region.

15. Number of observations, N, at station i for the defined region.

16. Total number of epicenters included in the defined region.

17. Epicenter latitude, degrees (USC&GS); plus north, minus south.

18. Epicenter longitude, degrees (USC&GS); plus east, minus west.

19. Event depth, kilometers (USC&GS).

20. Event origin time, hours, minutes, seconds (USC&GS).

21. Standard deviation, or error of estimate, of the kth event in the defined region;

$$\sigma_k = \left\{ \left[\sum_{i=1}^{L} (A^k_{i/r} - \bar{A}_{i/r})^2 \right] / (L-1) \right\}^{\frac{1}{2}}$$

where L is the number of subarrays recording the kth event not including the reference subarray R.

22. Average error, or bias, of the kth event;

$$E_k = \sum_{i=1}^{L} (A^k_{i/r} - \bar{A}_{i/r})/L$$

where L is the number of subarrays recording the kth event not including the reference subarray R.

23. Number of subarrays, L, recording the kth event, not including the reference subarray R.

The results in the Appendix are arranged first by general direction (beginning with the northwest and going clockwise) and second by increasing epicentral distance within each directional group (See Table I).

DISCUSSION

The following observations similar to those in a previous report using the Jeffreys-Bullen travel-time tables (Chiburis, 1966), are made concerning the LASA travel-time anomalies using the Herrin, November 1966 tables:

1. The anomaly variations between regions measured at a single subarray are as high as 1.66 seconds. For example, subarray F4 has an average anomaly of +0.74 sec ($N = 19$, $\sigma_{F4} = 0.13$) for the No. Colombia region and an average of -0.92 sec ($N = 12$, $\sigma_{F4} = 0.07$) for the Solomon Is. region.

2. Subarrays which are quite near the reference subarray A0 can have unusually large anomalies. For example, subarray D4 is located 30.75 km from A0 (center instrument to center instrument) and has an anomaly relative to A0 of +0.83 sec. ($N = 7$, $\sigma_{D4} = 0.06$) for the Dominican Republic-Mona Passage region.

3. The center instrument at subarray B2 is only 7.50 km from the center at A0, but it has an anomaly of -0.30 sec ($N = 13$, $\sigma_{B2} = 0.04$) for the Yugoslavia-Albania-Greece-Mediterranean Sea Region. This result suggests that the time anomalies <u>within one subarray</u> (7 km diameter) are far from negligible. Signals recorded within a subarray can be significantly misaligned with anomalies as large as 0.30 sec.

4. The anomalies are not slowly varying functions of either distance or azimuth. For example, subarray F1 has an anomaly of +0.22 sec ($N = 7$, $\sigma_{F1} = 0.09$) computed from events approaching from an east-southeastly direction at 5100 km distance (Virgin-Leeward Is. region), but at 4600 km (Dominican Republic-Mona Passage region) the anomaly is +0.84 sec ($N = 7$, $\sigma_{F1} = 0.07$). Subarray F2, on the other hand, has an anomaly of +0.12 sec ($N = 6$, $\sigma_{F2} = 0.08$) for events bearing 145° at 4800 km (So. Central America), whereas for events bearing 113° at a distance of 5100 km (Virgin-Leeward Is. region) the anomaly is -0.57 sec ($N = 6$, $\sigma_{F2} = 0.06$). Hence, the anomaly at F1 changes by 0.62 sec in a distance range of 500 km, and at F2 it changes by 0.69 sec in an azimuth range of 32°.

5. The maximum anomaly range observed at LASA is 1.94 sec; average anomaly at subarray F2 is -1.01 sec for events occurring in Rumania; average anomaly at subarray E1 is +0.93 for events from the No. Colombia region.

6. The maximum anomaly range for one particular region (North Atlantic Ridge) is 1.43 sec, where the D4 anomaly is +0.47 sec and the F2 anomaly is -0.97.

REFERENCES

Chiburis, E.F., 1966, "LASA Travel-Time Anomalies for Various Epicentral Regions", Seismic Data Laboratory Report No. 159, 13 September.

TABLE I

Distance-azimuth ranges by region

Direction	No. of Regions	Distance Range, km	Azimuth Range, deg	No. of Events
Northwest	15	2800-10900	292-329	214
North	6	5300-11000	340-016	36
Northeast	9	4700-10700	018-071	65
East	4	5700- 9900	075-103	16
East-southeast	3	4500- 5800	112-121	23
Southeast	13	3100-10800	132-170	133
South	8	2200-10100	158-192	49
Southwest	2	9500-10900	238-248	43
West	2	10600-11100	259-274	20
Undefined	3			
Continental U.S.		683- 2900	101-281	7
Eastern Is. and Pacific Ocean		4400-10800	184-253	6
Miscellaneous		2100-9600	334-007	14

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

(1) HERRIN66 TRAVEL-TIME TABLES — (3) INCLUDING ELLIPTICITY — (2) REFERENCE STATION A0

(4) ANOMALY REGION = CENTRAL AND SOUTHERN ALASKA
DISTANCE RANGE = 2886 TO 3352 KM AZIMUTH RANGE = 313.6 TO 320.0 DEGREES

(5) (6) (7) (8) (9) (10) (11) (12)

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
19 AUG66 GULF ALASKA	2886.06	313.65	.047	.062	-.086	.016	.129	.067	.002	-.136	.107	.001
12 OCT 66 S ALASKA	2901.32	315.93	.067	.070	-.040	.021	.153	.061	-.090	-.043	.069	0
12 OCT 66 S ALASKA	2930.64	315.54	.101	.133	-.027	.036	.202	.109	.037	.016	.121	.024
15 AUG66 SO ALASKA 1	2984.38	315.29	0	0	0	0	0	0	0	0	0	0
02 SEP66 SO ALASKA	3028.48	314.65	.128	.080	-.020	.013	.164	.148	.007	0	.159	.030
09 APR66 SO. ALASKA	3039.38	314.61	.127	.061	-.110	.032	-.007	.118	-.042	-.080	.128	.031
06 NOV65 S ALASKA	3059.03	315.42	0	0	0	.057	.072	0	.017	-.046	.172	.079
30 AUG66 SO ALASKA	3086.18	316.85	.030	.079	-.024	-.003	0	.052	-.103	-.027	.053	-.053
30 AUG 66 S ALASKA	3091.18	317.27	.023	.099	-.038	-.021	0	.048	.021	-.020	-.049	0
22 JUN66 S. ALASKA	3099.10	317.02	0	0	-.116	.037	-.052	.129	-.005	-.009	.041	.029
01 SEP66 SO ALASKA	3207.22	317.44	.050	.051	-.041	-.032	.017	.054	-.059	-.075	.000	0
15 AUG66 SO ALASKA 2	3215.74	316.14	.094	.103	0	.049	.126	.127	0	-.044	.076	-.131
07 OCT 66 S ALASKA	3228.97	316.94	-.042	.002	-.016	-.129	.065	0	.018	-.041	.029	0
26 MAY 66 ALASKA	3262.19	315.17	0	-.005	-.078	.001	.162	.115	-.115	-.002	.006	-.014
19 MAR 66 CEN ALASKA	3300.19	318.16	-.031	-.057	.041	.031	.111	-.032	-.027	-.033	-.058	
24 NOV65 C ALASKA	3310.26	319.98	.120	.003	0	-.029	.052	.048	-.020	-.080	.119	-.089
22 MAR66 SO. ALASKA	3320.60	315.64	.097	-.014	-.173	-.007	.062	.094	-.110	-.067	.137	-.100
06 FEB66 S. ALASKA	3327.32	314.20	.092	.048	.002	.033	.018	-.035	-.039	.072	.178	-.083
06 FEB67 SOUTH ALASK	3351.54	313.55	.132	.020	-.092	.027	.031	.098	-.048	-.026	.052	-.086
(13) AVERAGE			.070	.046	-.056	.007	.082	.075	-.030	-.042	.074	-.020
(14) SIGMA			.055	.050	.054	.042	.071	.053	.047	.045	.071	.062
(15) N			15	16	15	18	16	16	17	17	18	13

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
19 AUG66 GULF ALASKA	2886.06	313.65	-.177	.011	-.101	.043	-.180	-.190	-.207	-.314	-.139	-.058
12 OCT 66 S ALASKA	2901.32	315.93	-.172	.002	-.123	-.014	-.159	-.193	-.010	-.305	-.150	.005
12 OCT 66 S ALASKA	2930.64	315.54	-.156	.078	0	-.071	0	-.209	-.117	-.192	-.119	-.035
15 AUG66 SO ALASKA 1	2984.38	315.29	0	0	0	0	-.192	-.166	-.132	-.230	-.145	-.111
02 SEP66 SO ALASKA	3028.48	314.65	-.086	.086	0	-.037	0	-.209	-.146	-.251	-.056	-.082
09 APR66 SO. ALASKA	3039.38	314.61	-.155	.043	0	.068	.032	-.302	.008	-.324	-.058	0
06 NOV65 S ALASKA	3059.03	315.42	.018	.012	0	0	0	-.165	-.076	-.100	0	-.168
30 AUG66 SO ALASKA	3086.18	316.85	-.084	.032	-.266	-.097	-.121	-.078	-.094	-.158	.002	-.200
30 AUG 66 S ALASKA	3091.18	317.27	-.139	-.022	-.320	-.106	-.168	-.206	-.100	-.337	-.068	-.412
22 JUN66 S. ALASKA	3099.10	317.02	-.100	.061	-.178	-.114	-.038	-.157	.022	-.175	-.070	-.149
01 SEP66 SO ALASKA	3207.22	317.44	-.185	0	-.208	.080	-.177	-.158	-.058	-.330	-.163	-.254
15 AUG66 SO ALASKA 2	3215.74	316.14	0	.109	0	0	0	-.330	0	-.432	0	-.196
07 OCT 66 S ALASKA	3228.97	316.94	-.338	-.158	-.180	-.134	-.214	-.225	.067	-.358	-.200	-.185
26 MAY 66 ALASKA	3262.19	315.17	-.177	.011	-.198	.075	.001	-.160	-.131	-.341	-.123	-.228
19 MAR 66 CEN ALASKA	3300.19	318.16	-.221	-.158	0	-.057	-.211	-.292	-.045	-.392	0	-.438
24 NOV65 C ALASKA	3310.26	319.98	-.184	.001	-.043	-.002	0	-.188	.032	-.183	-.090	0
22 MAR66 SO. ALASKA	3320.60	315.64	-.153	.013	0	0	0	0	0	0	0	0
06 FEB66 S. ALASKA	3327.32	314.20	-.113	-.010	-.086	-.033	-.226	-.245	.025	-.328	.001	-.091
06 FEB67 SOUTH ALASK	3351.54	313.55	-.062	.005	-.103	.039	-.116	-.193	-.131	-.252	-.024	-.173
AVERAGE			-.147	.007	-.164	-.010	-.136	-.203	-.061	-.276	-.093	-.173
SIGMA			.076	.072	.083	.076	.084	.060	.076	.090	.061	.122
N			17	17	11	15	13	18	17	18	15	18

E V E N T P A R A M E T E R S

(16) 19 EPICENTERS	(17) LATITUDE	(18) LONGITUDE	(19) DEPTH	(20) ORIGIN TIME	(21) SHOCK SIGMA	(22) AV. ERROR	(23) NO. STA
19 AUG66 GULF ALASKA	59.500	-144.600	33	03 10 04.2	.0577	-.002	20
12 OCT 66 S ALASKA	60.500	-144.400	33	03 19 25.4	.0520	.011	19
12 OCT 66 S ALASKA	60.400	-145.000	25	08 20 30.0	.0685	.046	18
15 AUG66 SO ALASKA 1	60.400	-146.000	9	13 36 23.7	.0567	-.002	6
02 SEP66 SO ALASKA	60.200	-146.900	31	22 46 39.5	.0608	.042	17
09 APR66 SO. ALASKA	60.200	-147.100	34	18 51 45.0	.0674	.016	18
06 NOV65 S ALASKA	60.600	-147.300	37	06 38 41.5	.0875	.055	12
30 AUG66 SO ALASKA	61.300	-147.900	36	20 20 54.0	.0643	.006	19
30 AUG 66 S ALASKA	61.500	-147.500	33	20 23 18.0	.0851	-.039	18
22 JUN66 S. ALASKA	61.400	-147.700	93	11 38 53.7	.0670	.018	18
01 SEP66 SO ALASKA	61.800	-149.600	77	23 19 09.8	.0503	-.028	18
15 AUG66 SO ALASKA 2	61.200	-150.000	98	19 37 16.0	.0816	-.029	12
07 OCT 66 S ALASKA	61.600	-150.100	56	20 55 56.0	.0965	-.052	18
26 MAY 66 ALASKA	60.800	-151.000	95	10 44 13.0	.0606	-.007	19
19 MAR 66 CEN ALASKA	62.300	-151.200	82	09 33 43.2	.1095	-.064	17
24 NOV65 C ALASKA	63.200	-151.000	129	08 22 38.7	.0561	.008	17
22 MAR66 SO. ALASKA	61.100	-152.000	100	10 28 59.0	.0575	-.024	12
06 FEB66 S. ALASKA	60.400	-152.300	91	23 28 07.8	.0681	.116	20
06 FEB67 SOUTH ALASK	60.100	-152.800	110	03 26 35.4	.0440	.009	20

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66 TRAVEL-TIME TABLES

INCLUDING ELLIPTICITY REFERENCE STATION A0

ANOMALY REGION = NORTHEAST KODIAK
DISTANCE RANGE = 3234 TO 3355 KM AZIMUTH RANGE = 307.2 TO 310.1 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
04 NOV65 KODIAK I	3233.01	308.20	0	0	0	0	.124	0	0	-.032	.120	.075
22 APR66 KODIAK	3274.95	307.15	.049	.041	-.046	-.051	.040	.093	-.083	-.120	.190	0
30 DEC65 KODIAK I.	3314.15	309.57	0	0	0	0	0	0	.010	0	.166	-.100
19 MAR66 KODIAK	3340.56	308.75	.102	.060	-.063	-.009	.167	.044	.113	-.017	.214	0
22 DEC65 KODIAK I	3354.60	310.11	0	0	0	0	-.001	.012	-.027	-.025	.160	-.049
AVERAGE			.003	.055	-.054	-.030	.065	.037	.003	-.051	.165	-.025
SIGMA			.024	.015	.012	.050	.109	.022	.003	.052	.031	.050
N			2	2	2	2	4	3	4	4	5	3

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
04 NOV65 KODIAK I	3233.01	308.20	.025	-.021	-.033	.055						
22 APR66 KODIAK	3274.95	307.15	-.050	-.054	-.056	.141	0	-.135	.137	-.107	.221	-.026
30 DEC65 KODIAK I.	3314.15	309.57	-.023	-.000	0	.009	-.001	-.119	.134	-.327	0	-.126
19 MAR66 KODIAK	3340.56	308.75	-.045	.055	.012	0	-.052	-.269	.071	-.200	.276	-.031
22 DEC65 KODIAK I	3354.60	310.11	-.052	.040	.071	-.002	-.103	-.244	.050	-.179	.209	-.067
									.087	-.120	.170	-.025
AVERAGE			-.037	.004	-.002	.076	-.105	-.164	.056	-.203	.230	-.059
SIGMA			.043	.046	.056	.061	.065	.080	.030	.076	.053	.043
N			5	5	4	4	3	5	5	5	4	5

E V E N T P A R A M E T E R S

9 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
04 NOV65 KODIAK I	57.480	-151.100	33	18 30 22.0	.0457	.021	13
22 APR66 KODIAK	56.900	-151.800	33	10 19 51.0	.0592	-.021	16
30 DEC65 KODIAK I.	58.100	-152.400	33	16 33 43.4	.6446	-.007	12
19 MAR66 KODIAK	57.700	-153.000	2	06 10 47.0	.0547	.032	17
22 DEC65 KODIAK I	58.300	-153.070	[illegible]	15 41 27.0	.0695	-.021	16

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERMIN66TRAVEL-TIME TABLES REFERENCE STATION AO

INCLUDING ELLIPTICITY

ANOMALY REGION = SOUTHERN KODIAK

DISTANCE RANGE = 3355 TO 3394 KM AZIMUTH RANGE = 305.4 TO 307.8 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
29 AUG66 KODIAK	3355.48	305.96	.077	.146	-.046	-.073	0	.154	.027	-.077	.143	-.005
04 MAR66 KODIAK	3372.43	307.36	-.031	-.077	-.119	-.111	.032	.010	-.104	-.153	.079	.033
11 APR66 KODIAK I	3378.32	307.75	0	0	0	0	0	0	0	0	0	0
16 APR66 KODIAK 1	3384.60	307.36	-.040	-.007	-.090	-.052	.022	-.049	-.034	-.144	.070	.045
16 APR66 KDOIAK 2	3390.69	307.36	.010	-.027	-.050	-.022	.022	.021	-.034	-.094	.070	.035
22 JAN66 KOOIAK	3393.99	305.39	-.092	-.071	-.131	.011	-.147	-.090	0	.043	-.020	-.056
AVERAGE			-.015	-.007	-.087	-.049	-.018	.009	-.036	-.085	.067	.011
SIGMA			.063	.091	.039	.047	.086	.093	.054	.070	.061	.042
N			5	5	5	5	4	5	4	5	5	5

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
29 AUG66 KOOIAK	3355.48	305.96	.019	-.046	0	0	-.154	-.090	.143	-.372	-.092	-.109
04 MAR66 KODIAK	3372.43	307.36	-.119	-.028	-.108	0	-.285	-.290	-.096	-.341	0	-.359
11 APR66 KODIAK I	3378.32	307.75	0	0	-.121	0	-.213	-.098	.004	-.277	0	-.204
16 APR66 KDDIAK 1	3384.60	307.36	-.029	-.069	-.109	.003	-.174	-.179	-.014	-.336	0	-.233
16 APR66 KDDIAK 2	3390.69	307.36	-.049	-.109	-.119	.035	-.203	-.193	-.023	-.394	-.003	-.218
22 JAN66 KODIAK	3393.99	305.39	.017	-.102	-.057	.043	-.237	-.179	-.067	-.398	.051	-.288
AVERAGE			-.032	-.071	-.119	.027	-.224	-.171	-.009	-.383	-.014	-.235
SIGMA			.057	.035	.047	.021	.059	.072	.043	.049	.072	.084
N			5	5	5	3	6	6	6	6	3	6

E V E N T P A R A M E T E R S

6 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
29 AUG66 KODIAK	56.300	-153.100	33	22 30 22.8	.0880	.059	17
04 MAR66 KODIAK	57.000	-153.400	33	14 19 31.0	.0677	-.040	18
11 APR66 KODIAK I	57.200	-153.500	33	10 26 11.0	.0904	.034	6
16 APR66 KODIAK 1	57.000	-153.600	33	01 27 15.3	.0277	-.001	19
16 APR66 KODIAK 2	57.000	-153.700	33	04 40 45.0	.0260	-.000	20
22 JAN66 KODIAK	56.000	-153.700	33	14 27 07.9	.0715	-.021	19

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN68TRAVEL-TIME TABLES

INCLUDING ELLIPTICITY

REFERENCE STATION A0

ANOMALY REGION = ANDREANOF IS

DISTANCE RANGE = 4751 TO 5185 KM AZIMUTH RANGE = 302.2 TO 304.2 DEGREES

	EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
19	JUL66 ANDREANOF	4751.08	302.35	-.030	.067	-.042	-.057	.089	.050	.018	-.103	.192	-.173
23	JUL66 ANDREANOF-3	4761.53	302.24	.041	.068	-.111	-.050	.096	.070	.003	-.123	.159	-.131
22	JUL66 ANDREANOF	4769.01	302.41	.144	.068	-.053	-.047	.000	.042	-.049	-.045	.154	-.231
23	JUL66 ANDREANOF-2	4769.01	302.41	.084	.058	.037	-.067	.130	.112	.001	-.075	.246	-.021
23	JUL66 ANDREANOF-1	4770.47	302.44	-.030	.027	-.083	-.107	.071	.062	-.099	-.114	.177	-.142
15	NOV65 ANDREANOF	4775.39	302.78	0	0	0	0	.169	0	.076	0	.159	0
02	OCT66 ANDREANOF	4839.05	302.64	.049	.090	-.127	-.038	.044	.111	-.010	-.160	.109	0
24	OCT65 ANDREANOF	4863.44	302.55	.082	.078	-.035	-.021	.184	.150	.167	.106	.143	-.049
22	NOV65 ANDREANOF-1	4913.58	302.68	0	0	0	-.132	.036	-.004	-.113	-.078	-.109	-.193
03	MAY66 ANDREANOF	4980.27	302.39	.103	.072	-.036	-.066	.069	.047	-.028	-.071	.104	-.183
28	JAN66 ANDREANOF	4986.72	302.59	-.054	-.027	-.138	0	-.087	-.009	-.120	-.174	-.077	-.171
09	MAR66 ANDREANOF	4992.81	302.92	-.029	-.008	-.121	-.083	.040	.035	-.094	-.065	.015	-.114
24	FEB66 ANDREANOF	5003.49	302.82	-.030	-.027	-.101	-.074	0	0	0	0	0	0
23	SEP66 ANDREANOF	5020.98	302.30	.113	.105	-.016	.002	.116	.101	-.005	-.044	.185	-.235
05	JAN66 ANDREANOF	5081.07	302.32	.015	.007	-.018	-.130	.006	.046	-.163	0	0	0
15	MAY66 ANDREANOF	5086.70	302.81	0	-.004	-.002	-.056	.037	.011	.020	-.110	.047	-.121
17	MAY66 ANDREANOF	5093.86	302.39	.045	.057	-.089	-.050	.037	.047	-.064	-.049	.092	0
27	MAY66 ANDREANOF	5097.57	302.72	0	-.003	-.052	-.028	.084	0	.031	-.101	.145	-.089
04	MAR66 ANDREANOF	5099.41	302.88	-.007	-.003	-.054	-.057	.158	.224	-.030	-.082	.101	-.118
03	MAY66 ANDREANOF	5112.12	302.95	-.030	-.004	-.234	-.126	-.041	.024	-.342	-.112	.044	-.219
12	DEC65 ANDREANOF	5118.47	302.99	0	0	0	0	.093	.026	-.031	-.064	-.024	-.066
25	MAR66 ANDREANOF	5162.83	304.24	.070	-.002	-.108	0	.085	.031	-.034	-.117	-.043	-.114
13	FEB67 ANDREANOF	5166.64	302.86	.042	.040	-.153	-.121	.032	.107	-.075	-.116	.018	-.157
23	NOV65 ANDREANOF	5173.78	304.15	0	0	0	-.107	-.008	.082	.018	-.018	-.064	-.140
22	NOV65 ANDREANOF-2	5184.76	304.06	0	0	0	-.058	.140	.182	.120	.081	.083	0
	AVERAGE			.031	.033	-.077	-.071	.066	.070	-.027	-.074	.082	-.140
	SIGMA			.060	.042	.062	.038	.066	.059	.078	.066	.098	.099
	N			18	20	20	21	24	22	24	22	23	19

	EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
19	JUL66 ANDREANOF	4751.08	302.35	.012	-.054	.030	.021	-.327	-.079	0	-.008	-.212	-.208
23	JUL66 ANDREANOF-3	4761.53	302.24	-.055	-.037	.093	.040	-.349	-.287	-.085	-.579	-.239	-.206
22	JUL66 ANDREANOF	4769.01	302.41	-.081	-.135	.083	-.021	-.419	-.076	0	-.611	-.332	-.114
23	JUL66 ANDREANOF-2	4769.01	302.41	-.040	.005	.133	.049	-.279	-.106	.030	-.581	-.212	-.134
23	JUL66 ANDREANOF-1	4770.47	302.44	-.111	-.054	.135	.078	-.242	-.105	.034	-.505	-.176	-.130
15	NOV65 ANDREANOF	4775.39	302.78	0	-.038	.157	-.020	-.354	-.127	.021	-.638	-.291	-.227
02	OCT66 ANDREANOF	4839.05	302.64	-.101	0	.081	.053	-.334	-.113	-.077	-.622	-.286	-.220
24	OCT65 ANDREANOF	4863.44	302.55	-.029	-.034	.087	-.033	-.293	-.124	-.263	-.627	-.294	-.136
22	NOV65 ANDREANOF-1	4913.58	302.68	-.015	-.070	-.070	-.173	-.473	-.173	-.297	-.733	-.304	0
03	MAY66 ANDREANOF	4980.27	302.39	-.069	-.002	.037	-.024	-.387	-.137	-.218	-.674	-.218	-.204
28	JAN66 ANDREANOF	4986.72	302.59	-.126	-.093	-.143	-.137	-.366	-.151	-.227	-.607	-.305	-.370
09	MAR66 ANDREANOF	4992.81	302.92	0	-.056	-.102	-.078	-.448	-.231	-.333	-.672	-.388	-.336
24	FEB66 ANDREANOF	5003.49	302.82	-.164	-.071	.019	0	0	-.244	-.173	0	0	-.241
23	SEP66 ANDREANOF	5020.98	302.30	-.070	.048	.046	-.026	-.333	-.109	0	-.641	-.289	-.234
05	JAN66 ANDREANOF	5081.07	302.32	-.102	0	-.068	-.163	-.366	-.246	0	-.620	-.325	-.422
15	MAY66 ANDREANOF	5086.70	302.81	-.046	-.040	-.067	-.029	-.278	-.041	-.353	-.541	-.128	-.182
17	MAY66 ANDREANOF	5093.86	302.39	-.024	-.029	-.073	-.080	-.310	-.128	-.289	-.571	-.224	-.261
27	MAY66 ANDREANOF	5097.57	302.72	-.094	.016	.006	-.047	-.330	-.092	-.274	-.559	-.237	-.273
04	MAR66 ANDREANOF	5099.41	302.88	-.120	.007	-.086	-.047	-.328	-.201	-.190	-.559	-.228	-.263
03	MAY66 ANDREANOF	5112.12	302.95	-.182	.009	-.011	-.036	-.343	-.212	-.121	-.633	-.247	-.349
12	DEC65 ANDREANOF	5118.47	302.99	-.054	-.063	-.011	-.008	-.283	-.108	-.263	-.554	-.192	-.197
25	MAR66 ANDREANOF	5162.83	304.24	-.022	-.114	0	-.118	-.313	-.225	0	-.545	-.255	-.234
13	FEB67 ANDREANOF	5166.64	302.86	-.146	-.026	0	-.120	-.414	-.171	0	0	-.283	-.253
23	NOV65 ANDREANOF	5173.78	304.15	-.061	-.119	-.157	-.082	-.284	-.179	-.284	-.429	-.215	0
22	NOV65 ANDREANOF-2	5184.76	304.06	0	.029	-.013	-.032	-.277	-.128	-.295	-.521	-.104	0
	AVERAGE			-.070	-.040	.005	-.040	-.339	-.144	-.189	-.593	-.243	-.231
	SIGMA			.051	.040	.090	.069	.058	.057	.122	.064	.064	.083
	N			22	23	23	24	24	25	19	23	24	22

E V E N T P A R A M E T E R S

	25 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
19	JUL66 ANDREANOF	51.700	-173.300	47	19 20 33.4	.0478	.019	19
23	JUL66 ANDREANOF-3	51.600	-173.400	41	14 39 48.3	.0474	.025	20
22	JUL66 ANDREANOF	51.700	-173.500	56	10 17 22.5	.0682	.005	19
23	JUL66 ANDREANOF-2	51.700	-173.500	55	14 31 51.2	.0925	.069	20
23	JUL66 ANDREANOF-1	51.700	-173.600	41	03 37 55.8	.0850	.034	20
15	NOV65 ANDREANOF	51.900	-173.800	46	07 13 04.0	.0993	.062	12
02	OCT66 ANDREANOF	51.600	-174.600	56	12 08 00.6	.0536	.015	18
24	OCT65 ANDREANOF	52.100	-175.300	49	03 39 07.7	.0872	.060	20
22	NOV65 ANDREANOF-1	52.000	-176.100	49	14 00 27.0	.0925	-.067	16
03	MAY66 ANDREANOF	51.600	-176.800	20	12 06 54.0	.0366	.006	20
28	JAN66 ANDREANOF	51.700	-177.000	54	19 07 14.4	.0914	-.076	19
09	MAR66 ANDREANOF	51.900	-177.200	52	08 11 04.0	.0783	-.060	19
24	FEB66 ANDREANOF	51.800	-177.300	65	18 54 35.0	.0546	-.034	10
23	SEP66 ANDREANOF	51.400	-177.300	39	21 50 23.0	.0580	.027	19
05	JAN66 ANDREANOF	51.200	-178.100	33	07 01 58.0	.0873	-.061	15
15	MAY66 ANDREANOF	51.500	-178.400	31	14 46 06.5	.0678	.008	19
17	MAY66 ANDREANOF	51.200	-178.300	15	09 11 51.0	.0397	-.005	19
27	MAY66 ANDREANOF	51.400	-178.500	33	22 07 43.4	.0428	.011	18
04	MAR66 ANDREANOF	51.500	-178.600	53	11 35 03.4	.0535	.006	20
03	MAY66 ANDREANOF	51.500	-178.800	30	02 52 09.0	.0752	-.049	20
12	DEC65 ANDREANOF	51.500	-178.900	50	00 48 01.7	.0496	.007	16
25	MAR66 ANDREANOF	51.500	-179.600	33	12 54 55.7	.0546	-.019	17
13	FEB67 ANDREANOF	51.100	-179.400	33	20 43 49.0	.0494	-.034	17
23	NOV65 ANDREANOF	51.400	-179.700	48	02 17 49.4	.0850	-.018	16
22	NOV65 ANDREANOF-2	51.300	-179.800	40	20 25 30.4	.0914	.053	14

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN&TRAVEL-TIME TABLES — REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = UNIMAK I.
DISTANCE RANGE = 4143 TO 4102 KM AZIMUTH RANGE = 303.1 TO 303.8 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
16 SEP66 UNIMAK	4042.74	303.29	.058	.096	.027	-.025	.112	.121	-.013	.024	.157	.009
19 MAY66 UNIMAK I	4057.94	303.17	0	.127	-.032	-.056	.109	.121	.039	-.066	.273	-.058
27 FEB66 UNIMAK	4079.63	303.07	.175	-.012	-.122	-.008	0	.182	.001	.062	.391	0
19 MAY66 UNIMAK I	4081.10	303.42	0	.067	-.045	-.055	.075	.085	-.014	-.080	0	0
30 DEC65 UNIMAK	4093.87	303.47	0	0	0	0	0	0	.025	0	.266	-.147
02 JAN66 UNIMAK	4101.70	303.84	0	0	0	.027	.054	.142	-.060	-.042	.252	-.107
AVERAGE			.117	.070	-.043	-.023	.088	.130	-.004	-.022	.268	-.076
SIGMA			.083	.059	.061	.035	.020	.036	.035	.063	.003	.067
N			2	4	4	5	4	5	6	5	5	4

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
16 SEP66 UNIMAK	4042.74	303.29	-.005	.077	.059	.204	-.220	-.114	.079	0	-.178	-.072
19 MAY66 UNIMAK I	4057.94	303.17	.008	.093	.140	.115	-.229	-.043	.124	-.522	-.222	-.024
27 FEB66 UNIMAK	4079.63	303.07	.070	.017	.131	.162	-.280	-.067	.024	-.504	-.149	-.040
19 MAY66 UNIMAK I	4081.10	303.42	-.091	.006	.035	.039	-.314	-.108	.073	-.565	-.177	-.130
30 DEC65 UNIMAK	4093.87	303.47	-.013	.085	.087	.095	-.206	-.180	.051	-.561	-.253	-.123
02 JAN66 UNIMAK	4101.70	303.84	.044	.029	.129	.065	0	.021	.108	-.525	-.236	-.049
AVERAGE			.006	.051	.097	.113	-.251	-.082	.077	-.535	-.203	-.073
SIGMA			.055	.038	.043	.061	.047	.069	.034	.027	.040	.044
N			6	6	6	6	5	6	6	5	6	6

E V E N T P A R A M E T E R S

6 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
16 SEP66 UNIMAK	54.100	-163.500	89	02 48 21.8	.0497	.008	19
19 MAY66 UNIMAK I	54.000	-163.700	85	09 18 35.0	.0333	.016	19
27 FEB66 UNIMAK	53.900	-164.000	40	20 43 00.3	.0594	.019	18
19 MAY66 UNIMAK I	54.100	-164.100	28	07 06 26.8	.0481	-.035	17
30 DEC65 UNIMAK	54.100	-164.300	28	02 06 31.1	.0465	-.020	13
02 JAN66 UNIMAK	54.300	-164.500	57	04 52 17.1	.0427	.003	16

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66 TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = FOX IS

DISTANCE RANGE = 4204 TO 4664 KM AZIMUTH RANGE = 300.2 TO 303.4 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
28 APR66 FOX I ALEUT	4203.94	303.35	-.027	.072	-.047	-.060	-.049	-.026	.010	-.037	.070	-.200
07 MAY66 FOX IS	4299.12	303.38	.166	.096	.030	.057	.070	.124	.003	-.035	.178	0
15 MAY66 FOX IS	4337.10	303.20	0	.038	-.079	-.086	.035	.054	-.043	-.106	0	-.170
16 MAY66 FOX IS	4343.51	303.22	.064	.108	.021	-.015	.116	.104	.026	-.036	.154	0
05 MAY66 FOX IS	4394.68	303.43	.029	.009	-.082	-.045	.020	.090	-.035	-.080	0	0
24 APR66 FOX IS	4430.13	302.44	-.034	.085	-.045	-.086	.046	.036	-.068	-.102	.134	0
13 FEB67 FOX IS	4482.13	302.34	.085	.117	0	-.068	.093	.139	.044	-.005	0	-.079
16 FEB66 FOX IS.	4485.57	302.20	.023	0	-.064	-.039	.079	0	-.003	-.054	0	-.067
03 JUL66 FOX	4520.90	302.52	-.021	0	.022	-.008	0	.084	.043	-.059	.183	-.054
30 MAR66 FOX IS.	4568.28	301.77	.099	.002	0	-.146	0	-.020	-.015	-.118	.128	-.223
04 DEC65 FOX IS.	4590.57	300.91	0	0	0	.017	.108	.183	.029	-.037	.208	-.031
30 NOV65 FOX IS	4616.62	303.28	.144	.101	.032	.073	.251	.153	-.014	.039	.200	-.002
07 AUG 66 ALEUT. IS.	4663.86	300.15	-.002	.011	-.041	-.113	.029	.124	.063	-.052	0	0
AVERAGE			.048	.064	-.026	-.033	.073	.087	.003	-.052	.168	-.103
SIGMA			.069	.045	.046	.068	.076	.066	.038	.043	.065	.083
N			11	10	10	13	11	12	13	13	8	8

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
28 APR66 FOX I ALEUT	4203.94	303.35	-.114	-.014	-.062	-.097	-.250	-.078	-.017	-.494	-.141	-.215
07 MAY66 FOX IS	4299.12	303.38	.000	.001	.029	-.095	-.265	-.109	-.075	0	-.150	-.099
15 MAY66 FOX IS	4337.10	303.20	-.005	-.016	0	-.028	-.249	-.089	-.096	-.575	-.156	-.099
16 MAY66 FOX IS	4343.51	303.22	.004	.075	.038	-.003	-.231	-.079	.108	-.529	-.209	-.066
05 MAY66 FOX IS	4394.68	303.43	-.095	.012	.136	.063	-.278	-.080	.076	-.600	-.130	-.093
24 APR66 FOX IS	4430.13	302.44	-.037	-.039	.084	.031	-.258	-.119	-.002	-.613	-.249	-.105
13 FEB67 FOX IS	4482.13	302.34	-.025	-.007	.124	.093	-.255	0	.022	-.508	-.178	-.119
16 FEB66 FOX IS.	4485.57	302.20	0	0	.174	.069	-.215	.037	.032	-.620	-.138	-.127
03 JUL66 FOX	4520.90	302.52	-.043	.030	.121	.036	-.250	-.036	-.035	-.560	-.214	-.126
30 MAR66 FOX IS.	4568.28	301.77	-.111	-.110	.089	.026	-.284	-.090	-.133	-.579	-.125	-.154
04 DEC65 FOX IS.	4590.57	300.91	-.005	.020	.071	-.009	0	-.061	0	-.534	0	-.046
30 NOV65 FOX IS	4616.62	303.28	-.043	.106	.037	.128	-.203	.003	-.009	-.543	-.163	-.139
07 AUG 66 ALEUT. IS.	4663.86	300.15	0	-.021	.073	-.003	-.225	-.075	-.093	-.446	-.079	-.149
AVERAGE			-.043	.004	.078	.035	-.247	-.065	-.018	-.550	-.161	-.118
SIGMA			.044	.055	.061	.058	.024	.045	.072	.052	.046	.043
N			11	12	12	13	12	12	12	12	12	13

E V E N T P A R A M E T E R S

13 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
28 APR66 FOX I ALEUT	53.800	-165.900	33	06 41 17.0	.0758	-.046	20
07 MAY66 FOX IS	53.600	-167.300	55	17 09 16.0	.0495	.018	18
15 MAY66 FOX IS	53.400	-167.800	33	04 34 11.0	.0416	-.027	17
16 MAY66 FOX IS	53.400	-167.900	15	23 16 35.0	.0472	.021	19
05 MAY66 FOX IS	53.400	-168.700	25	00 22 27.0	.0478	-.004	18
24 APR66 FOX IS	52.700	-168.900	60	15 13 36.1	.0469	-.031	19
13 FEB67 FOX IS	52.500	-169.600	51	10 07 34.5	.0377	.024	17
16 FEB66 FOX IS.	52.400	-169.600	47	11 58 14.2	.0488	.015	15
03 JUL66 FOX	52.500	-170.200	69	03 55 15.7	.0330	.006	18
30 MAR66 FOX IS.	51.900	-170.600	33	05 46 31.0	.0718	-.048	18
04 DEC65 FOX IS.	51.300	-170.600	18	02 11 49.9	.0482	.031	14
30 NOV65 FOX IS	52.700	-171.800	134	12 37 26.0	.0801	.056	20
07 AUG 66 ALEUT. IS.	50.600	-171.300	69	02 13 05.1	.0533	-.007	17

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN(68)TRAVEL-TIME TABLES — REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = RAI - NEAR IS

DISTANCE RANGE = 5263 TO 5689 KM AZIMUTH RANGE = 304.2 TO 310.2 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
29 OCT65 AMCHITKA	5242.58	304.40	0	0	0	0	.151	.090	.013	-.023	-.046	0
06 DEC65 RAT IS.	5396.00	304.25	0	0	0	0	.140	0	-.026	-.035	.025	0
11 NOV65 RAT IS	5416.22	304.01	0	0	0	0	.026	.024	0	-.045	0	-.133
13 MAY66 RAT IS	5451.36	305.18	.100	.088	-.063	-.080	.099	.095	-.057	-.132	.200	-.008
02 JUN66 RAT IS	5458.79	305.37	0	.098	-.065	-.049	.063	.048	0	-.163	.137	-.188
26 MAR66 RAT IS	5475.22	305.18	.051	.059	.036	-.031	.088	0	-.066	-.084	.062	-.094
26 FEB66 NEAR IS	5540.02	307.79	-.031	.054	-.127	-.115	-.088	0	-.120	-.138	-.114	-.155
08 APR66 NEAR IS.	5551.21	307.72	.098	0	-.126	-.059	.010	-.002	.012	-.098	-.067	-.003
05 DEC65 NEAR IS.	5553.89	308.17	0	0	0	.038	.100	.032	-.045	.020	-.021	-.057
11 APR66 NEAR IS	5571.09	308.13	0	0	0	0	0	0	0	0	0	0
24 FEB66 NEAR IS	5595.94	308.43	-.051	0	-.103	-.062	.004	.009	-.046	-.165	-.059	.020
13 JAN66 NEAR IS.	5610.18	308.96	.006	.065	-.028	-.008	.115	-.007	-.054	.015	-.092	-.156
17 NOV65 NEAR IS	5611.62	308.09	0	0	0	0	.187	0	0	-.123	-.131	-.158
23 DEC65 NEAR IS.	5614.67	308.70	0	0	0	-.011	.089	-.007	.001	-.087	-.049	-.100
16 JAN66 NEAR IS.	5616.13	309.00	-.053	-.125	-.138	-.168	-.044	-.116	-.064	-.126	-.100	-.215
02 MAR66 NEAR IS	5618.40	308.28	-.013	-.023	-.082	-.104	.020	-.022	-.094	-.144	-.074	-.208
08 JUN66 NEAR	5653.05	309.52	-.035	.026	-.093	-.086	-.104	-.158	-.019	-.101	-.110	0
14 JUL66 NEAR	5653.05	309.52	-.005	.086	-.103	-.056	.085	-.047	-.029	-.061	-.120	-.053
10 APR66 NEAR IS	5658.95	309.56	.035	.076	.026	-.026	.036	.013	.050	-.101	-.068	-.063
01 DEC65 NEAR IS.	5662.25	307.67	0	0	0	.050	0	.015	.006	-.045	.008	-.038
08 MAR66 NEAR IS	5684.17	310.16	-.066	.046	-.019	-.053	-.002	.001	-.007	-.056	-.157	-.093
14 NOV65 NEAR IS A	5689.50	310.04	0	0	0	-.004	.065	-.019	.035	-.046	0	-.100
	AVERAGE		.009	.043	-.068	-.048	.052	-.003	-.028	-.082	-.041	-.100
	SIGMA		.057	.065	.057	.055	.078	.063	.044	.054	.093	.071
	N		12	11	13	17	20	17	18	21	19	18

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
29 OCT65 AMCHITKA	5242.58	304.40	-.126	0	0	-.003	-.356	-.154	-.248	-.524	-.273	-.272
06 DEC65 RAT IS.	5396.00	304.25	-.144	-.031	-.075	-.093	-.434	-.146	-.307	-.557	-.337	-.305
11 NOV65 RAT IS	5416.22	304.01	-.127	.023	-.076	.029	-.407	-.046	-.302	-.597	-.359	-.346
13 MAY66 RAT IS	5451.36	305.18	-.123	-.091	.026	0	-.346	0	0	-.399	-.375	-.433
02 JUN66 RAT IS	5458.79	305.37	-.059	-.109	-.134	-.159	-.428	-.217	0	-.541	-.289	-.502
26 MAR66 RAT IS	5475.22	305.18	-.114	-.046	-.108	-.027	-.400	-.147	0	-.532	-.255	-.310
26 FEB66 NEAR IS	5540.02	307.79	-.182	-.099	-.230	-.058	-.454	-.245	-.242	-.491	-.440	-.394
08 APR66 NEAR IS.	5551.21	307.72	-.170	-.101	-.245	-.028	-.388	-.194	0	-.484	-.340	-.421
05 DEC65 NEAR IS.	5553.89	308.17	-.114	.027	-.178	-.045	-.397	-.178	-.232	-.503	-.346	-.332
11 APR66 NEAR IS	5571.09	308.13	0	0	-.142	-.012	-.202	-.100	0	-.304	-.231	-.331
24 FEB66 NEAR IS	5595.94	308.43	0	-.057	-.170	.004	-.382	-.232	-.394	-.509	-.368	-.406
13 JAN66 NEAR IS.	5610.18	308.96	-.138	-.066	-.087	-.055	-.318	-.114	-.377	-.608	0	-.248
17 NOV65 NEAR IS	5611.62	308.09	-.123	.058	-.100	-.087	-.392	-.150	-.348	-.449	-.216	0
23 DEC65 NEAR IS.	5614.67	308.70	-.131	-.075	-.107	.099	-.365	-.215	-.258	-.429	-.310	-.358
16 JAN66 NEAR IS.	5616.13	309.00	-.199	-.027	-.246	-.160	-.448	-.249	-.201	-.462	0	-.443
02 MAR66 NEAR IS	5618.40	308.28	-.179	-.091	-.120	.022	-.332	-.158	-.272	-.560	-.319	-.474
08 JUN66 NEAR	5653.05	309.52	-.265	-.113	-.203	-.011	-.373	-.215	-.361	-.552	-.271	-.333
14 JUL66 NEAR	5653.05	309.52	-.106	.056	-.111	-.119	0	-.158	-.231	-.449	0	-.456
10 APR66 NEAR IS	5658.95	309.56	-.107	-.094	-.179	-.018	-.284	-.167	-.336	-.430	-.295	-.385
01 DEC65 NEAR IS.	5662.25	307.67	-.133	.022	-.170	0	0	-.150	-.245	-.435	-.365	-.286
08 MAR66 NEAR IS	5684.17	310.16	0	.002	-.138	-.070	0	-.033	0	-.406	0	-.319
14 NOV65 NEAR IS A	5689.50	310.04	0	-.012	-.136	.011	0	-.073	0	0	0	-.389
	AVERAGE		-.141	-.041	-.139	-.039	-.373	-.160	-.293	-.490	-.317	-.368
	SIGMA		.045	.057	.064	.064	.062	.059	.059	.065	.058	.069
	N		18	20	21	20	18	21	18	21	17	21

E V E N T P A R A M E T E R S

22 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	ND. STA
29 OCT65 AMCHITKA	51.438	179.183	0	21 00 00.1	.0565	.038	13
06 DEC65 RAT IS.	50.600	177.400	37	01 22 36.0	.0513	.010	14
11 NOV65 RAT IS	51.700	176.200	104	02 21 24.4	.0558	.010	14
13 MAY66 RAT IS	51.000	176.200	33	07 54 42.0	.0939	.038	17
02 JUN66 RAT IS	51.100	176.000	41	03 27 53.3	.0810	-.014	17
26 MAR66 RAT IS	50.900	175.900	44	13 16 48.0	.0478	.023	18
26 FEB66 NEAR IS	52.400	173.600	51	00 33 50.1	.0718	-.056	19
08 APR66 NEAR IS.	52.300	173.500	45	23 46 50.8	.0524	-.012	18
05 DEC65 NEAR IS.	52.600	173.200	36	18 14 50.2	.0486	.022	17
11 APR66 NEAR IS	52.500	173.000	29	16 05 41.8	.0943	.069	7
24 FEB66 NEAR IS	52.600	172.500	65	05 40 06.8	.0551	-.024	10
13 JAN66 NEAR IS.	52.900	172.000	14	10 41 11.0	.0617	.010	19
17 NOV65 NEAR IS	52.300	172.500	33	16 41 47.0	.0712	.010	13
23 DEC65 NEAR IS.	52.700	172.100	64	01 59 22.0	.0457	.019	17
16 JAN66 NEAR IS.	52.900	171.900	25	09 11 50.0	.0914	-.067	19
02 MAR66 NEAR IS	52.400	172.300	40	11 51 20.7	.0544	-.030	20
08 JUN66 NEAR	53.100	171.100	20	19 56 21.3	.0735	-.044	19
14 JUL66 NEAR	53.100	171.100	29	18 07 04.1	.0523	.004	10
10 APR66 NEAR IS	53.100	171.000	20	10 39 51.0	.0462	.017	20
01 DEC65 NEAR IS.	51.800	172.100	33	07 26 25.0	.0542	.035	14
08 MAR66 NEAR IS	53.400	170.300	18	23 26 40.0	.0595	.009	16
14 NOV65 NEAR IS A	53.300	170.300	33	13 28 33.0	.0437	.028	11

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN68TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = KAMCHATKA -KOMANDORSKY
DISTANCE RANGE = 5836 TO 6570 KM AZIMUTH RANGE = 312.9 TO 315.7 DEGREES

	EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
19	JUL66 KOMANDORSKY	5835.96	315.21	.007	.054	.065	-.047	-.035	-.162	.076	-.040	-.156	-.119
16	JAN66 KOMANDORSKY	5859.05	313.47	-.057	-.092	-.050	-.018	.019	0	.018	-.102	0	0
20	MAY66 KOMANDORSKY	5859.01	313.61	0	.088	-.002	-.068	-.028	-.018	.067	-.044	-.179	-.123
21	FEB66 C KAMCHATKA	5977.82	315.28	-.080	.111	-.018	-.053	-.030	0	.082	-.040	-.188	-.163
25	NOV65 KAMCHATKA	5995.71	314.82	-.130	.102	.006	-.046	-.059	-.124	.128	-.019	-.183	-.108
22	OCT 66 KAMCHATKA	6049.63	315.19	-.170	.165	.011	-.067	.015	-.265	.267	.054	-.238	0
28	JAN 67 KAMCHATKA	6156.60	315.67	-.252	.170	.145	-.001	-.051	-.149	.127	.052	-.204	-.109
18	NOV65 KAMCHATKA	6199.32	314.36	0	0	0	0	0	0	.022	-.110	-.201	0
20	FEB66 KAMCHATKA	6298.88	313.93	-.154	.057	.018	.005	-.048	0	.082	.003	-.221	-.138
22	DEC65 C KAMCHATKA	6304.35	312.95	0	0	0	-.070	0	0	.063	-.051	0	-.156
23	SEP66 KAMCHATKA	6317.11	313.77	-.136	.088	.008	-.027	-.033	-.070	.085	-.008	-.265	-.142
07	JAN66 C KAMCHATKA	6319.57	312.36	-.051	0	-.008	-.060	-.051	-.043	.041	-.037	-.258	-.168
19	APR66 F KAMCHATKA	6326.39	314.14	-.191	-.112	-.045	0	-.066	-.175	.001	-.020	-.322	0
05	FEB66 KAMCHATKA C	6373.15	314.05	-.142	-.010	-.005	-.077	0	0	0	-.002	-.274	-.107
21	DEC65 KAMCHATKA	6380.08	313.86	0	0	0	0	0	0	-.013	0	-.219	-.242
23	AUG66 E CST KAMCH	6520.39	313.87	-.042	.058	.024	-.046	.021	-.011	.074	-.035	0	-.158
08	APR66 KAMCHATKA 2	6533.71	312.95	-.194	.068	.061	-.041	-.066	-.112	0	-.009	-.213	-.187
08	APR66 KAMCHATKA 1	6539.31	313.00	-.153	-.061	-.109	-.071	-.145	-.221	-.017	-.119	-.241	-.197
28	JAN66 KAMCHATKA C	6551.51	313.68	-.224	-.070	-.075	-.199	-.134	-.061	-.023	-.026	-.247	-.222
22	JAN66 KAMCHATKA	6570.50	313.54	-.145	.042	.085	-.001	-.058	-.102	.151	-.008	0	0
		AVERAGE		-.133	.041	.003	-.052	-.048	-.116	.068	-.030	-.229	-.161
		SIGMA		.071	.087	.059	.046	.049	.078	.071	.048	.045	.040
		N		16	16	17	17	16	13	18	19	16	15

	EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
19	JUL66 KOMANDORSKY	5835.96	315.21	-.074	.022	-.159	-.119	-.209	-.040	0	-.392	.009	-.316
16	JAN66 KOMANDORSKY	5859.05	313.47	-.254	-.065	-.247	-.146	-.286	-.111	-.286	-.536	-.181	-.407
20	MAY66 KOMANDORSKY	5859.01	313.61	-.149	-.056	-.232	-.105	-.271	-.111	0	-.421	-.148	-.323
21	FEB66 C KAMCHATKA	5977.82	315.28	-.109	0	0	-.094	-.230	-.050	0	-.356	-.049	0
25	NOV65 KAMCHATKA	5995.71	314.82	0	.019	-.177	-.095	-.241	-.077	0	-.415	-.113	-.206
22	OCT 66 KAMCHATKA	6049.63	315.19	-.108	.172	0	-.157	-.277	-.028	-.222	-.412	-.183	-.336
28	JAN 67 KAMCHATKA	6156.60	315.67	-.094	.094	-.227	-.119	-.212	.039	0	-.327	-.009	0
18	NOV65 KAMCHATKA	6199.32	314.36	-.167	-.059	0	0	-.195	0	0	-.459	-.178	-.273
20	FEB66 KAMCHATKA	6298.88	313.93	-.117	0	-.274	-.036	-.187	.036	0	-.278	-.051	-.290
22	DEC65 C KAMCHATKA	6304.35	312.95	-.069	.005	-.223	-.105	-.236	-.057	0	-.411	-.059	-.333
23	SEP66 KAMCHATKA	6317.11	313.77	-.043	.018	-.247	0	-.241	-.007	0	-.344	-.072	-.360
07	JAN66 C KAMCHATKA	6319.57	312.36	-.082	.030	-.232	-.048	-.305	-.107	0	-.343	-.103	0
19	APR66 F KAMCHATKA	6326.39	314.14	0	-.218	-.269	0	-.349	-.091	0	-.390	-.193	-.445
05	FEB66 KAMCHATKA C	6373.15	314.05	-.132	-.025	-.259	-.065	-.207	-.078	-.293	-.327	-.331	-.437
21	DEC65 KAMCHATKA	6380.08	313.86	-.077	.048	-.314	-.232	-.341	-.068	0	0	-.077	-.327
23	AUG66 E CST KAMCH	6520.39	313.87	-.081	.042	-.268	-.105	-.229	-.040	-.268	-.374	-.071	-.366
08	APR66 KAMCHATKA 2	6533.71	312.95	-.035	.013	-.332	-.104	-.264	-.063	-.357	-.402	-.118	-.355
08	APR66 KAMCHATKA 1	6539.31	313.00	-.147	-.087	-.330	-.130	-.315	-.106	-.392	-.440	-.203	-.357
28	JAN66 KAMCHATKA C	6551.51	313.68	-.156	-.046	-.313	-.101	-.272	-.071	-.289	-.401	-.198	-.397
22	JAN66 KAMCHATKA	6570.50	313.54	0	0	-.267	-.061	-.176	.033	-.205	-.423	-.180	-.275
		AVERAGE		-.111	-.006	-.257	-.107	-.252	-.053	-.286	-.392	-.124	-.343
		SIGMA		.053	.084	.048	.045	.050	.049	.063	.057	.081	.053
		N		17	17	17	17	20	19	8	19	20	17

E V E N T P A R A M E T E R S

20	EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
19	JUL66 KOMANDORSKY	56.200	164.900	18	01 40 53.9	.0605	.035	19
16	JAN66 KOMANDORSKY	54.900	165.800	15	19 44 39.5	.0785	-.041	17
20	MAY66 KOMANDORSKY	55.000	165.700	46	11 44 29.0	.0397	.003	18
21	FEB66 C KAMCHATKA	55.800	162.900	33	14 14 29.6	.0379	.022	15
25	NOV65 KAMCHATKA	55.200	163.000	33	03 35 11.7	.0378	.020	18
22	OCT 66 KAMCHATKA	55.200	162.000	59	12 47 18.2	.0877	.023	18
28	JAN 67 KAMCHATKA	55.000	160.200	113	22 28 01.2	.0794	.048	18
18	NOV65 KAMCHATKA	53.900	160.700	12	21 38 12.4	.0640	-.031	9
20	FEB66 KAMCHATKA	53.100	159.800	44	05 58 09.6	.0524	.034	17
22	DEC65 C KAMCHATKA	52.400	160.500	5	00 28 46.2	.0272	.009	13
23	SEP66 KAMCHATKA	52.900	159.760	68	02 07 02.4	.0347	.022	18
07	JAN66 C KAMCHATKA	52.600	160.000	92	07 45 27.3	.0435	.011	17
19	APR66 F KAMCHATKA	53.100	159.300	62	20 26 12.5	.0916	-.088	15
05	FEB66 KAMCHATKA C	52.800	158.800	44	14 24 15.0	.0651	-.021	17
21	DEC65 KAMCHATKA	52.600	158.800	67	00 32 00.7	.0683	-.026	11
23	AUG66 E CST KAMCH	51.900	157.200	186	15 02 55.0	.0433	.029	19
08	APR66 KAMCHATKA 2	51.200	157.800	48	05 24 44.6	.0362	-.006	19
08	APR66 KAMCHATKA 1	51.200	157.700	47	01 46 44.9	.0746	-.064	20
28	JAN66 KAMCHATKA C	51.600	157.000	107	22 38 12.2	.0677	-.047	20
22	JAN66 KAMCHATKA	51.400	156.900	151	18 31 01.0	.0563	.030	16

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERNINGS TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = KURILE IS AND SEA OF OKHOTSK NORTHERN GROUP

DISTANCE RANGE = 6606 TO 7051 KM AZIMUTH RANGE = 311.4 TO 316.0 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
21 JUN66 KURILE	6607.52	311.93	-.056	.122	.089	-.039	.003	-.068	.118	.042	-.133	-.134
08 APR66 KURILE	6635.80	312.89	-.052	.166	.019	-.029	-.043	-.069	.112	.029	-.157	0
20 DEC65 KURILE IS	6655.05	312.75	0	0	0	0	-.023	-.016	0	.044	-.194	-.200
11 DEC65 KURILE IS	6720.84	313.43	0	0	0	-.007	-.044	-.051	.077	.004	-.188	-.197
24 OCT65 KURILE IS	6731.35	313.34	-.039	-.013	-.077	-.022	-.103	-.034	.048	.071	-.174	0
05 FEB66 KURILE IS	6752.82	313.26	-.147	-.092	-.025	-.059	.012	-.121	-.000	-.057	-.113	-.203
22 OCT65 NW OF KURIL	6758.90	315.37	0	0	0	0	-.087	0	.044	0	0	0
05 NOV65 KURILE IS A	6805.80	312.22	0	0	0	0	-.003	0	0	.037	0	0
07 NOV65 KURILE IS	6855.25	312.20	0	0	0	-.033	-.020	-.007	.024	-.046	-.224	-.170
21 NOV65 KURILE IS	6902.05	311.85	0	0	0	0	-.047	0	-.020	.032	-.213	-.262
11 FEB67 KURILE IS	6910.55	311.63	-.080	.065	.056	-.043	-.052	-.079	.013	.013	-.149	-.240
20 FEB66 KURILE	6913.31	311.36	-.169	.025	-.083	-.124	.093	0	-.034	-.016	-.197	-.238
03 MAR66 KURILE	6931.96	311.96	-.211	.105	.042	-.098	.104	.026	.100	.130	-.228	-.258
12 DEC65 OKHOTSK	7050.80	314.97	0	0	0	0	-.088	-.088	.081	-.012	-.221	0
AVERAGE			-.108	.054	.003	-.021	-.022	-.051	.047	.021	-.183	-.218
SIGMA			.067	.088	.066	.062	.061	.044	.051	.049	.038	.048
N			7	7	7	9	14	10	12	13	12	9

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
21 JUN66 KURILE	6607.52	311.93	-.129	.220	-.193	.053	-.247	-.005	-.285	-.403	-.171	-.312
08 APR66 KURILE	6635.80	312.89	-.026	.032	-.263	-.051	-.304	.041	-.287	-.425	-.174	-.348
20 DEC65 KURILE IS	6655.05	312.75	-.102	.092	-.279	-.061	0	.055	-.286	0	-.191	-.292
11 DEC65 KURILE IS	6720.84	313.43	-.073	.064	-.320	-.043	-.296	.005	0	-.472	-.142	-.244
24 OCT65 KURILE IS	6731.35	313.34	-.063	.055	-.261	-.089	-.315	.079	-.280	-.363	-.213	-.142
05 FEB66 KURILE IS	6752.82	313.26	-.109	.088	-.173	-.041	-.272	.025	-.121	-.535	-.242	-.220
22 OCT65 NW OF KURIL	6758.90	315.37	0	.024	-.277	-.136	0	.139	-.354	-.526	-.213	-.287
05 NOV65 KURILE IS A	6805.80	312.22	0	0	0	-.051	0	.105	0	0	-.207	-.213
07 NOV65 KURILE IS	6855.25	312.20	-.062	.125	-.214	-.054	-.315	0	0	-.274	-.283	-.228
21 NOV65 KURILE IS	6902.05	311.85	-.134	.093	-.188	-.130	-.289	.075	0	-.461	-.284	-.169
11 FEB67 KURILE IS	6910.55	311.63	-.099	.200	-.180	-.105	-.396	0	-.273	-.432	-.200	-.197
20 FEB66 KURILE	6913.31	311.36	-.072	0	-.314	-.131	0	.017	0	-.591	-.200	-.257
03 MAR66 KURILE	6931.96	311.96	-.086	.160	-.287	-.065	-.358	.113	-.194	-.525	-.075	-.084
12 DEC65 OKHOTSK	7050.80	314.97	-.098	.032	-.197	-.163	-.319	0	-.282	-.415	-.236	-.168
AVERAGE			-.086	.100	-.242	-.069	-.311	.059	-.262	-.452	-.206	-.222
SIGMA			.030	.065	.053	.064	.042	.047	.067	.086	.056	.069
N			12	12	13	14	10	11	9	12	14	14

E V E N T P A R A M E T E R S

14 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
21 JUN66 KURILE	50.100	157.800	14	23 05 25.9	.0667	.032	20
08 APR66 KURILE	50.600	156.700	200	23 05 36.0	.0515	.007	19
20 DEC65 KURILE IS	50.400	156.600	33	07 12 33.7	.0285	-.005	13
11 DEC65 KURILE IS	50.500	155.300	110	12 16 59.9	.0375	-.001	16
24 OCT65 KURILE IS	49.700	156.100	30	18 15 04.9	.0493	.001	19
05 FEB66 KURILE IS	50.200	155.100	98	16 16 01.0	.0654	-.012	20
22 OCT65 NW OF KURIL	51.600	153.200	400	07 45 26.0	.0637	-.035	10
05 NOV65 KURILE IS A	49.200	155.400	33	03 03 22.0	.0583	.034	6
07 NOV65 KURILE IS	48.900	154.900	33	14 12 38.0	.0605	.008	15
21 NOV65 KURILE IS	48.400	154.700	33	06 18 56.8	.0452	-.015	14
11 FEB67 KURILE IS	46.200	154.800	26	14 33 06.3	.0454	-.002	19
20 FEB66 KURILE	48.000	155.000	33	18 15 50.0	.0712	-.040	16
03 MAR66 KURILE	46.300	154.300	45	03 25 28.0	.0815	-.034	20
12 DEC65 OKHOTSK	50.300	149.900	438	19 25 09.1	.0486	-.017	14

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = KURILE IS SOUTHERN GROUP

DISTANCE RANGE = 7210 TO 7678 KM AZIMUTH RANGE = 311.1 TO 313.4 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
10 FEB60 KURILE	7210.35	312.77	0	.086	.040	-.071	.087	0	.113	.064	0	-.163
10 NOV65 KURILE IS	7347.35	311.17	0	0	0	0	0	-.112	.054	0	-.197	0
08 MAY60 KURILE	7400.71	311.06	-.125	.015	.001	-.104	.034	-.110	.037	-.037	-.129	0
13 DEC05 KURILE IS	7433.25	311.06	0	0	0	-.024	0	-.054	.198	0	0	0
22 JUN60 KURILE	7436.97	312.15	0	.025	.032	-.030	0	-.110	.007	-.004	-.131	-.170
18 DEC05 KURILE IS	7450.54	311.22	0	0	0	0	-.075	-.124	-.013	-.081	-.188	-.263
24 OCT65 KURILE IS	7461.06	311.78	0	-.023	0	0	-.116	0	0	-.184	-.141	0
30 DEC65 KURILE IS	7569.45	311.50	0	0	0	-.129	0	0	0	.009	-.221	-.165
20 NOV65 KURILE IS	7612.04	313.36	-.064	.003	.040	-.023	-.020	-.007	.063	.046	-.116	-.189
05 APR60 KURILE	7630.74	311.87	-.002	.003	.051	-.009	-.089	-.074	.017	-.019	-.161	-.150
12 JAN66 KURILE IS	7634.29	312.05	-.120	.023	-.000	-.096	-.090	-.082	.095	.034	-.165	-.194
19 FEB00 KURILE	7678.40	312.17	-.077	.006	-.003	-.101	-.067	0	.007	-.022	-.138	-.199
AVERAGE			-.097	.033	.023	-.070	-.044	-.004	.050	-.003	-.149	-.190
SIGMA			.020	.037	.023	.050	.071	.027	.045	.047	.035	.041
N			5	8	7	9	6	6	10	10	10	8

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
10 FEB60 KURILE	7210.35	312.77	-.096	.008	-.310	-.074	-.269	.084	-.216	-.466	-.170	-.241
19 NOV05 KURILE IS	7347.35	311.17	-.090	.060	-.200	-.074	0	.107	-.309	-.916	-.291	-.476
08 MAY60 KURILE	7400.71	311.06	0	.179	-.233	-.136	0	.108	-.307	-.531	-.200	-.160
13 DEC65 KURILE IS	7433.25	311.06	-.107	.194	0	-.076	0	.140	0	-.514	-.318	-.136
22 JUN60 KURILE	7436.07	312.15	-.114	.147	-.100	-.003	-.386	0	-.226	-.480	-.180	-.202
18 DEC05 KURILE IS	7450.54	311.22	-.132	.103	-.102	-.085	-.377	.111	-.277	-.929	-.304	-.141
24 OCT65 KURILE IS	7461.06	311.78	0	0	-.318	-.143	0	.040	-.289	-.403	-.312	-.196
30 DEC65 KURILE IS	7569.45	311.50	-.024	.107	-.123	-.107	-.430	.057	-.230	-.441	-.368	-.302
20 NOV05 KURILE IS	7612.04	313.30	-.069	.065	-.103	-.003	-.299	.162	-.216	0	0	-.078
05 APR06 KURILE	7630.74	311.87	-.002	.104	-.230	-.033	-.435	.006	-.137	-.463	-.228	-.167
12 JAN60 KURILE IS	7634.20	312.05	-.037	0	-.300	-.057	-.294	.001	-.196	-.425	-.269	-.199
10 FEB60 KURILE	7678.40	312.17	-.002	0	-.214	-.006	-.254	.097	-.200	-.379	-.209	-.174
AVERAGE			-.003	.111	-.219	-.080	-.343	.097	-.239	-.479	-.263	-.178
SIGMA			.034	.033	.073	.056	.073	.036	.061	.047	.003	.062
N			10	0	11	12	8	11	11	11	11	12

E V E N T P A R A M E T E R S

12 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
10 FEB66 KURILE	47.200	150.000	168	20 13 33.0	.0611	.021	17
10 NOV65 KURILE IS	45.300	150.000	33	07 14 13.2	.0425	-.005	12
08 MAY00 KURILE	44.000	150.500	33	08 20 57.0	.0426	-.013	17
13 DEC65 KURILE IS	44.700	150.200	33	14 46 10.2	.0522	.017	10
22 JUN06 KURILE	45.400	140.200	33	18 50 25.6	.0334	.006	17
18 DEC65 KURILE IS	44.700	140.000	33	08 30 45.8	.0413	-.024	16
24 OCT65 KURILE IS	45.000	140.300	48	18 45 38.3	.0037	-.048	11
30 DEC65 KURILE IS	44.200	146.500	70	16 56 56.2	.0746	-.027	14
29 NOV05 KURILE IS	45.100	146.500	193	09 00 08.3	.0519	.033	18
05 APR06 KURILE	44.000	147.700	83	04 57 37.0	.0401	.003	20
12 JAN66 KURILE IS	44.100	147.900	33	01 38 10.3	.0402	.002	19
19 FEB66 KURILE	43.900	147.000	98	22 48 55.0	.0456	.013	18

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN68TRAVEL-TIME TABLES — REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = SAKHALIN I.-SEA OF JAPAN-HOKKAIDO

DISTANCE RANGE = 7490 TO 8272 KM AZIMUTH RANGE = 312.4 TO 316.2 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
7 APR 67 OKHOTSK	7490.34	315.07	-.194	-.020	-.042	-.132	-.166	-.024	.104	-.129	-.157	-.221
02 MAR66 SAKHLIN I.	7565.62	316.12	-.120	.034	-.002	-.102	-.193	-.105	.088	-.042	-.123	-.236
10 SEP 66 OKHOTSK	7624.06	315.77	-.184	.007	.010	-.036	-.061	-.134	.134	.006	-.141	-.267
27 OCT65 SAKHALIN I	7736.23	315.97	0	0	0	0	0	0	0	.031	0	0
19 MAR66 HOKKAIDO	7793.92	312.39	-.123	-.030	-.006	-.023	-.136	-.087	.008	-.079	-.158	0
18 FEB66 HOKKAIDO	7863.30	314.62	-.114	-.084	-.025	0	-.057	0	-.026	-.003	-.216	-.213
05 MAR66 HOKKAIDO	7985.53	313.55	-.146	-.039	-.069	0	-.197	-.184	0	-.094	-.184	-.199
17 JUN66 HOKKAIDO	8029.37	313.38	-.107	.032	-.058	-.140	-.141	-.024	-.049	-.064	-.147	-.215
23 JUN66 E SEA JAPAN	8076.67	316.07	0	-.095	0	-.053	-.053	-.120	.040	-.025	-.118	-.213
20 AUG 66 HOKKAIDO	8097.59	315.19	-.125	.015	-.063	-.107	-.137	-.049	.068	.010	-.133	-.173
28 FEB66 E SEA JAPAN	8100.96	316.17	-.004	.066	.010	-.064	-.073	0	.060	.013	-.014	0
20 FEB67 HOKKAIDO	8264.58	313.81	-.118	.013	.024	-.120	-.134	-.129	.068	-.026	-.194	-.174
02 FEB67 HOKKAIDO	8271.95	314.68	-.059	0	.048	-.097	-.051	-.040	.061	-.010	-.070	-.205
	AVERAGE		-.118	-.009	-.016	-.087	-.117	-.097	.051	-.032	-.138	-.212
	SIGMA		.052	.050	.039	.041	.055	.049	.055	.048	.055	.028
	N		11	11	11	10	12	10	11	13	12	10

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
7 APR 67 OKHOTSK	7490.34	315.07	-.121	.041	-.309	-.003	-.309	.118	0	0	-.042	-.225
02 MAR66 SAKHLIN I.	7565.62	316.12	-.138	.012	-.161	.043	-.282	.106	0	-.337	-.160	-.140
10 SEP 66 OKHOTSK	7624.06	315.77	-.160	.061	-.215	-.030	-.296	.085	-.027	-.450	-.112	-.192
27 OCT65 SAKHALIN I	7736.23	315.97	-.056	-.007	-.285	-.023	0	.065	-.254	-.389	-.167	-.229
19 MAR66 HOKKAIDO	7793.92	312.39	-.119	.054	-.246	-.007	-.318	.090	-.222	-.404	-.234	-.232
18 FEB66 HOKKAIDO	7863.30	314.62	-.126	0	-.218	.114	-.340	.070	-.213	-.280	-.056	-.332
05 MAR66 HOKKAIDO	7985.53	313.55	-.183	-.019	-.308	-.002	-.445	-.038	-.191	-.376	-.247	-.375
17 JUN66 HOKKAIDO	8029.37	313.38	-.159	.006	-.298	.040	-.303	.023	-.147	-.361	-.140	-.299
23 JUN66 E SEA JAPAN	8076.67	316.07	-.174	-.008	-.232	.077	-.307	.039	-.091	-.308	-.111	-.317
20 AUG 66 HOKKAIDO	8097.59	315.19	-.224	.105	-.169	0	-.310	.058	-.040	-.207	-.028	-.365
28 FEB66 E SEA JAPAN	8100.96	316.17	-.127	.068	-.273	0	-.225	.029	-.140	-.263	-.119	-.361
20 FEB67 HOKKAIDO	8264.58	313.81	-.115	-.016	-.263	-.008	-.295	.017	-.134	-.267	-.129	-.362
02 FEB67 HOKKAIDO	8271.95	314.68	-.035	.020	-.189	.072	-.271	.038	-.067	-.286	-.160	-.354
	AVERAGE		-.134	.026	-.244	.025	-.308	.054	-.140	-.327	-.131	-.291
	SIGMA		.050	.039	.051	.047	.051	.042	.074	.071	.066	.078
	N		13	12	13	11	12	13	11	12	13	13

E V E N T P A R A M E T E R S

13 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
7 APR 67 OKHOTSK	47.000	146.000	296	19 39 13.0	.0548	-.003	18
02 MAR66 SAKHLIN I.	47.200	144.300	356	13 04 15.6	.0500	.013	19
10 SEP 66 OKHOTSK	46.600	144.100	385	02 57 47.7	.0602	.012	20
27 OCT65 SAKHALIN I	46.000	142.900	230	22 40 17.1	.0591	-.009	10
19 MAR66 HOKKAIDO	43.300	145.800	11	08 11 40.0	.0471	-.013	19
18 FEB66 HOKKAIDO	44.300	143.100	225	19 02 51.5	.0541	-.002	17
05 MAR66 HOKKAIDO	42.800	143.100	120	04 48 44.5	.0714	-.060	18
17 JUN66 HOKKAIDO	42.400	142.900	67	08 48 33.2	.0376	-.021	20
23 JUN66 E SEA JAPAN	43.800	139.900	218	05 01 42.4	.0371	.002	18
20 AUG 66 HOKKAIDO	43.100	140.600	161	09 32 31.7	.0623	.021	19
28 FEB66 E SEA JAPAN	43.700	139.600	225	02 02 13.6	.0605	.032	17
20 FEB67 HOKKAIDO	41.100	140.600	161	00 35 22.9	.0350	-.006	20
02 FEB67 HOKKAIDO	41.600	139.700	176	16 24 39.1	.0520	.031	19

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66 TRAVEL-TIME TABLES

INCLUDING ELLIPTICITY

REFERENCE STATION A0

ANOMALY REGION = HONSHU

DISTANCE RANGE = 8392 TO 9321 KM AZIMUTH RANGE = 305.9 TO 312.8 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
02 APR66 EAST HONSHU	8391.V0	311.40	-.134	.029	-.051	-.075	-.104	-.144	-.085	-.111	-.156	-.225
23 JUN66 CST HONSHU	8462.43	311.36	-.104	-.157	-.113	-.219	-.038	-.067	-.041	-.258	0	0
09 MAY66 HONSHU	8564.66	312.79	-.176	-.025	-.044	-.135	-.188	-.119	-.072	-.119	-.181	-.264
14 MAR66 HONSHU	8589.49	311.00	-.094	-.001	-.013	-.096	-.047	0	-.053	-.116	-.136	-.231
14 NOV65 HONSHU	8614.81	310.80	0	0	0	0	0	.021	-.090	0	.091	0
03 APR66 EAST HONSHU	8623.25	310.73	-.126	.051	-.062	-.098	-.092	-.029	-.069	-.018	-.061	-.254
18 FEB66 HONSHU	8646.41	310.98	-.143	-.018	-.034	-.040	-.139	0	-.040	0	-.193	-.191
05 JAN66 HONSHU	8699.30	310.14	-.051	.006	-.080	-.255	-.184	0	-.079	0	-.071	-.327
17 MAY66 E C HONSHU	8716.83	310.33	0	.766	.718	.725	.668	.706	.749	.666	.704	.524
16 APR66 E HONSHU	8725.58	309.16	-.080	.038	-.044	-.131	-.120	-.122	-.090	-.011	-.085	-.190
05 APR66 HONSHU	8746.42	312.56	-.135	-.077	-.106	-.134	-.188	-.116	-.102	-.121	-.189	-.255
14 JUL66 S CST HONSH	8762.94	310.51	-.076	-.002	.006	-.086	-.081	-.069	-.051	-.098	-.039	-.189
06 APR67 CST HONSHU	8917.86	310.31	-.125	.004	-.005	-.173	-.068	.022	.027	-.058	-.186	-.336
06 APR67 CST HONSHU	8917.86	310.31	-.125	.064	.005	-.143	-.188	-.110	-.073	-.088	-.156	-.246
06 APR67 CST HONSHU	8923.69	310.38	-.144	-.026	-.026	-.093	-.037	-.098	-.054	-.098	-.104	-.198
06 APR67 CST HONSHU	8926.43	310.25	-.216	-.035	-.105	-.173	-.149	-.168	-.112	-.118	-.057	-.275
11 JAN66 HONSHU	9068.49	311.11	-.124	-.019	.036	-.116	0	0	-.043	0	0	-.242
25 JUN66 S. HONSHU	9145.16	309.23	-.089	-.037	-.011	0	-.130	-.112	-.046	-.153	0	0
27 NOV65 HONSHU-1	9177.48	307.15	-.100	0	.027	-.040	-.093	0	-.033	0	-.016	-.186
27 NOV65 HONSHU-2	V186.03	307.09	0	-.038	.057	.060	-.094	0	-.069	-.121	-.047	-.135
12 NOV65 HONSHU	V186.03	307.09	0	0	0	0	0	0	-.082	0	-.017	.136
10 MAR66 S OF HONSHU	9201.25	309.97	-.069	-.113	-.094	-.195	-.199	-.029	-.080	.224	-.06[illegible]	-.247
23 MAY66 HONSHU	9253.28	307.04	.001	.015	.056	-.094	.004	.050	-.059	-.077	-.01[illegible]	-.323
19 SEP66 S OF HONSHU	9320.99	308.11	-.043	.067	.003	-.081	-.059	-.000	-.027	-.139	-.12[illegible]	-.173
AVERAGE			-.108	.023	.005	-.076	-.071	-.024	-.028	-.070	-.051	-.195
SIGMA			.048	.179	.167	.196	.180	.199	.168	.193	.187	.174
N			20	21	22	21	21	17	24	18	21	21

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
02 APR66 EAST HONSHU	8391.V0	311.40	-.213	.006	-.247	-.031	-.344	.066	-.108	0	-.151	-.336
23 JUN66 CST HONSHU	8462.43	311.36	-.185	.120	-.172	-.046	-.353	.021	.024	-.456	-.216	-.299
09 MAY66 HONSHU	8564.66	312.7V	-.198	-.016	-.263	-.050	-.351	-.016	-.124	-.392	-.225	-.399
14 MAR66 HONSHU	8589.49	311.00	0	.056	-.225	-.050	-.363	-.051	-.054	-.275	-.260	-.351
14 NOV65 HONSHU	8614.81	310.80	0	.099	0	-.024	-.449	-.004	.089	0	-.292	-.142
03 APR66 EAST HONSHU	8623.25	310.73	-.125	.067	-.022	-.002	-.494	-.035	-.147	-.398	-.318	-.249
18 FEB66 HONSHU	8646.41	310.98	-.161	0	-.135	-.007	-.370	-.037	.089	-.358	-.258	-.356
05 JAN66 HONSHU	8699.30	310.14	-.095	.024	-.131	-.048	-.350	-.045	.193	-.367	-.331	-.264
17 MAY66 E C HONSHU	8716.83	310.33	.700	.825	.626	.805	.394	.728	.642	.434	.472	.386
16 APR66 E HONSHU	8725.58	309.16	-.145	-.010	-.144	-.041	-.373	-.036	-.027	-.353	-.264	-.315
05 APR66 HONSHU	8746.42	312.56	-.238	-.030	-.172	-.077	-.333	-.060	-.037	-.434	-.268	-.389
14 JUL66 S CST HONSH	8762.94	310.51	-.185	.049	-.114	-.001	-.355	-.001	.033	-.421	-.284	-.348
06 APR67 CST HONSHU	8917.86	310.31	-.206	-.117	-.153	-.151	-.418	.004	-.045	0	-.305	-.355
06 APR67 CST HONSHU	8917.86	310.31	-.215	.003	-.283	-.152	-.448	-.035	-.115	0	-.325	-.414
06 APR67 CST HONSHU	8923.69	310.38	-.157	-.036	-.150	-.020	-.371	.003	-.109	0	-.331	-.493
06 APR67 CST HONSHU	8926.43	310.25	-.164	.032	-.116	0	-.344	.065	-.191	0	-.250	-.458
11 JAN66 HONSHU	9068.49	311.11	-.147	.002	-.087	-.035	-.287	-.013	0	-.330	-.332	-.347
25 JUN66 S. HONSHU	9145.16	309.23	-.122	-.01V	-.055	-.081	-.402	-.094	.073	-.433	-.453	-.270
27 NOV65 HONSHU-1	9177.48	307.15	-.102	.028	-.071	-.057	0	-.055	.007	-.441	-.327	0
27 NOV65 HONSHU-2	9186.03	307.09	-.200	.007	-.124	-.078	-.475	-.084	-.099	0	-.371	-.212
12 NOV65 HONSHU	9186.03	307.09	-.150	-.007	-.024	-.078	-.325	-.234	-.049	0	-.421	-.312
10 MAR66 S OF HONSHU	9201.25	309.97	0	-.074	-.199	-.068	-.486	-.135	-.001	-.319	-.374	-.410
23 MAY66 HONSHU	9253.28	307.04	-.152	.114	-.056	-.098	-.489	.025	.005	-.341	-.419	-.254
19 SEP66 S OF HONSHU	9320.99	308.11	-.155	-.012	-.064	-.005	0	-.084	.065	-.272	-.325	-.341
AVERAGE			-.125	.049	-.104	-.009	-.354	-.005	.006	-.319	-.276	-.301
SIGMA			.193	.178	.175	.185	.177	.168	.189	.210	.174	.170
N			21	23	23	23	22	24	23	16	24	23

E V E N T P A R A M E T E R S

24 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
02 APR66 EAST HONSHU	38.700	141.900	39	22 43 21.4	.0754	-.037	19
23 JUN66 CST HONSHU	38.200	141.400	92	21 51 57.4	.0920	-.043	18
09 MAY66 HONSHU	38.400	139.300	20	02 57 48.1	.0822	-.065	20
14 MAR66 HONSHU	37.100	140.800	63	06 38 06.5	.0527	-.024	18
14 NOV65 HONSHU	36.800	140.800	67	05 54 16.7	.0882	.029	10
03 APR66 EAST HONSHU	36.700	140.800	68	04 43 41.1	.0630	-.020	20
18 FEB66 HONSHU	36.700	140.400	65	00 27 53.6	.0536	-.025	17
05 JAN66 HONSHU	35.800	140.800	90	05 46 54.3	.0791	-.027	18
17 MAY66 E C HONSHU	35.800	140.500	68	00 59 06.3	.7689	.747	19
16 APR66 E HONSHU	35.000	141.500	63	10 13 28.0	.0447	-.021	20
05 APR66 HONSHU	37.000	138.200	4	08 51 16.4	.0841	-.072	20
14 JUL66 S CST HONSH	35.600	140.000	71	06 18 47.6	.0345	-.014	20
06 APR67 CST HONSHU	34.400	139.100	33	08 49 41.3	.0819	-.049	19
06 APR67 CST HONSHU	34.400	139.100	25	09 06 44.0	.0906	-.071	19
06 APR67 CST HONSHU	34.400	139.000	13	06 17 29.3	.0667	-.044	19
06 APR67 CST HONSHU	34.300	139.100	15	23 28 51.0	.0896	-.081	18
11 JAN66 HONSHU	33.700	137.200	33	14 16 32.2	.0384	-.018	15
25 JUN66 S. HONSHU	29.600	142.100	49	01 46 10.4	.0771	-.043	17
27 NOV65 HONSHU-1	30.600	140.200	60	03 04 20.6	.0447	-.010	15
27 NOV65 HONSHU-2	30.500	140.200	41	03 44 04.9	.0767	-.026	17
12 NOV65 HONSHU	30.500	140.200	40	17 52 24.1	.0947	-.036	12
10 MAR66 S OF HONSHU	32.200	137.500	382	04 26 19.6	.0983	-.078	19
23 MAY66 HONSHU	30.000	139.800	28	08 39 44.4	.0732	-.004	20
19 SEP66 S OF HONSHU	30.200	138.400	450	04 53 10.5	.0460	-.005	19

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = BONIN-MARIANA-VOLCANO-CAROLINE IS
DISTANCE RANGE = 9477 TO 10873 KM AZIMUTH RANGE = 292.0 TO 306.2 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
19 JUL66 BONIN IS	9476.87	306.19	-.209	-.103	-.111	0	0	-.125	-.104	0	-.073	0
05 JAN66 MARIANA IS.	9504.81	297.04	-.270	0	-.030	-.257	-.144	0	-.076	-.135	-.009	-.280
7 MAR 67 VOLCANO IS	9574.67	299.45	0	-.004	-.004	0	-.131	-.040	-.027	-.092	-.154	-.190
10 FEB66 MARIANA IS	9608.54	298.60	-.160	-.106	-.101	-.172	-.121	-.040	-.190	-.072	-.050	-.203
29 MAR66 VOLCANO IS.	9645.64	301.44	-.028	-.076	0	-.118	-.034	-.124	-.113	0	-.077	-.254
20 NOV65 MARIANA IS	9685.58	299.08	0	0	0	0	0	0	-.091	-.148	-.124	-.355
27 OCT 66 MARIANA IS	9706.51	296.70	-.206	-.033	-.064	-.105	-.190	-.171	-.118	-.160	-.189	-.320
20 APR 66 MARIANA IS	9733.63	294.86	-.211	-.108	-.106	-.145	-.205	-.137	-.201	-.220	-.135	0
20 APR66 MARIANA IS.	9740.57	294.93	-.140	-.108	-.046	-.145	-.244	-.127	-.162	-.190	-.103	0
1 AUG 66 MARIANA IS	9762.53	299.59	0	-.016	-.011	-.003	0	-.070	-.013	-.109	-.063	-.240
27 NOV 66 MARIANA IS	9946.19	298.09	-.163	-.062	-.062	-.199	-.202	-.222	-.150	-.212	-.116	0
20 MAY66 S MARIANA	10197.94	299.23	0	-.038	-.016	-.112	-.141	-.141	-.106	-.054	-.079	-.261
23 APR 67 MARIANA IS	10231.30	291.97	-.109	.014	-.009	-.147	-.084	-.173	-.048	-.092	-.072	-.216
11 DEC 66 MARIANA IS	10260.93	292.13	-.108	-.106	-.088	-.181	-.212	-.172	-.169	-.258	-.149	0
07 FEB67 MARIANA IS	10289.74	293.19	-.130	-.039	-.062	-.168	-.158	-.062	-.083	-.129	-.185	-.333
20 JUL66 SOF MARIANA	10301.33	293.79	-.079	-.055	.041	0	0	0	0	0	-.089	0
07 JUL66 S. MARIANA	10474.60	292.53	-.173	-.116	0	-.099	-.206	0	-.212	-.187	-.207	-.333
07 JAN 67 MARIANA IS	10614.08	293.40	-.138	-.129	-.060	-.173	-.185	-.084	-.155	-.190	-.021	0
07 JUN66 CAROLINE IS	10872.64	295.43	-.161	-.131	-.121	-.145	-.120	-.111	-.171	-.205	-.028	0
AVERAGE			-.152	-.073	-.053	-.145	-.158	-.120	-.122	-.153	-.102	-.271
SIGMA			.059	.046	.046	.056	.056	.053	.059	.059	.057	.057
N			15	17	16	15	15	15	18	16	19	11

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
19 JUL66 BONIN IS	9476.87	306.19	-.250	0	0	-.126	0	0	-.025	-.435	-.448	-.411
05 JAN66 MARIANA IS.	9504.81	297.04	-.202	-.019	0	-.230	-.480	-.276	0	-.549	-.584	-.282
7 MAR 67 VOLCANO IS	9574.67	299.45	-.198	-.093	-.131	-.150	0	-.030	-.077	-.438	-.480	-.224
10 FEB66 MARIANA IS	9608.54	298.60	-.248	-.145	-.168	-.108	-.570	-.261	0	-.523	-.352	-.341
29 MAR66 VOLCANO IS.	9645.64	301.44	-.210	-.156	-.229	-.056	-.402	-.133	-.004	-.365	0	-.280
20 NOV65 MARIANA IS	9685.58	299.08	-.277	-.202	0	0	-.420	-.123	-.072	-.495	0	-.295
27 OCT 66 MARIANA IS	9706.51	296.70	-.308	-.182	-.051	-.178	-.583	-.094	-.007	-.396	-.464	-.220
20 APR 66 MARIANA IS	9733.63	294.86	-.337	0	-.155	-.173	-.522	-.272	.041	-.522	-.415	0
20 APR66 MARIANA IS.	9740.57	294.93	-.189	-.179	.028	-.201	-.535	-.184	.048	-.464	-.471	-.288
1 AUG 66 MARIANA IS	9762.53	299.59	-.194	0	-.045	-.023	-.555	0	.026	-.365	-.198	-.050
27 NOV 66 MARIANA IS	9946.19	298.09	-.272	-.188	-.195	-.204	-.556	-.244	.047	-.454	-.938	-.354
20 MAY66 S MARIANA	10197.94	299.23	-.188	-.169	-.132	-.060	-.361	-.107	-.009	-.378	-.277	-.336
23 APR 67 MARIANA IS	10231.30	291.97	-.171	-.133	-.108	.014	-.383	-.067	.036	-.358	-.310	-.260
11 DEC 66 MARIANA IS	10260.93	292.13	-.289	0	-.132	-.102	0	-.238	.041	-.471	-.435	-.318
07 FEB67 MARIANA IS	10289.74	293.19	-.168	-.183	-.087	-.156	-.418	-.169	-.083	-.487	-.230	-.409
20 JUL66 SOF MARIANA	10301.33	293.79	-.197	0	0	0	-.398	-.143	0	0	-.344	0
07 JUL66 S. MARIANA	10474.60	292.53	-.265	-.222	-.226	-.167	0	-.161	0	-.350	-.401	-.292
07 JAN 67 MARIANA IS	10614.08	293.40	-.290	-.313	-.139	-.038	-.418	-.291	-.002	-.337	-.361	-.475
07 JUN66 CAROLINE IS	10872.64	295.43	-.216	0	-.249	-.127	-.441	-.295	.085	-.523	-.468	-.418
AVERAGE			-.232	-.168	-.135	-.123	-.497	-.182	.013	-.439	-.422	-.309
SIGMA			.055	.068	.076	.070	.099	.084	.049	.069	.165	.097
N			19	13	15	17	15	17	15	18	17	17

E V E N T P A R A M E T E R S

19 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
19 JUL66 BONIN IS	27.900	139.100	554	06 22 21.0	.0441	.024	12
05 JAN66 MARIANA IS.	21.800	146.600	34	18 10 00.0	.1015	.031	16
7 MAR 67 VOLCANO IS	22.900	144.200	33	08 28 56.7	.0770	.039	17
10 FEB66 MARIANA IS	20.800	146.300	43	14 21 10.9	.0570	.004	19
29 MAR66 VOLCANO IS.	23.700	142.100	79	02 17 00.0	.0633	.032	17
20 NOV65 MARIANA IS	21.900	143.800	33	03 37 31.0	.0607	.018	11
27 OCT 66 MARIANA IS	20.200	145.600	118	09 18 15.5	.0575	.010	20
20 APR 66 MARIANA IS	18.600	146.900	55	16 26 21.2	.0572	.043	17
20 APR66 MARIANA IS.	18.800	146.800	47	06 43 00.0	.0540	.007	19
1 AUG 66 MARIANA IS	21.700	142.900	313	11 50 15.5	.1124	.077	16
27 NOV 66 MARIANA IS	17.500	145.400	214	13 41 19.0	.1307	.063	19
20 MAY66 S MARIANA	13.900	146.100	66	09 14 49.2	.0627	.038	19
23 APR 67 MARIANA IS	13.500	146.100	56	17 52 51.0	.0744	.058	20
11 DEC 66 MARIANA IS	13.400	145.800	59	19 52 09.4	.0470	.028	17
07 FEB67 MARIANA IS	13.900	144.800	135	08 28 57.9	.0691	.005	20
20 JUL66 SOF MARIANA	13.800	143.900	186	20 50 50.0	.0686	.056	8
07 JUL66 S. MARIANA	12.200	144.200	40	09 46 33.2	.0601	.027	16
07 JAN 67 MARIANA IS	11.800	142.700	36	13 34 48.3	.0770	.012	19
07 JUN66 CAROLINE IS	11.300	139.600	50	13 59 36.0	.0668	.025	18

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66 TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = CHINA SEA - RYUKYU - TAIWAN
DISTANCE RANGE = 9686 TO 10790 KM AZIMUTH RANGE = 312.3 TO 316.6 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
18 MAY67 KYUSHU	9685.82	313.97	-.067	.057	-.023	-.122	-.086	.015	.010	-.109	-.012	-.151
20 FER67 RYUKYU	9941.16	313.95	-.055	-.026	-.015	-.099	-.143	-.083	-.123	-.181	-.076	0
04 JAN66 E CHINA SEA	10016.97	315.49	-.099	-.051	-.056	-.239	-.179	-.031	-.069	-.145	.023	0
21 MAR66 RYUKYU	10229.69	312.28	-.085	.010	-.017	-.097	-.095	-.030	-.086	-.138	-.018	-.146
20 MAY66 RYUKYU	10338.94	312.48	0	-.056	-.051	-.083	-.168	-.089	-.073	-.171	-.089	-.241
21 FER66 N.E. TAIWAN	10399.73	314.93	-.153	-.047	-.104	-.194	-.159	0	-.111	-.169	-.066	-.213
16 NOV65 RYUKYU IS	10510.64	314.82	0	0	0	0	0	0	.029	0	-.063	0
10 JUL66 SW RYUKYU	10622.43	314.18	-.117	-.056	-.025	-.149	.022	.023	-.105	-.166	.037	-.101
01 JULY 66 TAIWAN	10711.30	316.59	0	0	-.033	-.177	-.207	-.171	0	0	-.071	-.138
28 MAY66 TAIWAN	10749.10	316.38	0	-.023	.043	-.114	-.106	-.214	-.038	-.090	-.095	-.169
23 FER67 TAIWAN I	10768.00	316.28	.005	-.074	0	-.073	-.136	-.146	-.078	-.106	-.088	-.146
12 MAR66 TAIWAN	10772.15	316.15	.013	-.105	-.084	-.181	.004	.022	-.218	-.193	-.062	-.072
23 MAR66 TAIWAN	10789.82	315.83	-.035	-.099	.008	-.189	-.157	-.056	-.009	-.102	-.040	-.239
AVERAGE			-.065	-.043	-.032	-.143	-.118	-.070	-.073	-.143	-.042	-.162
SIGMA			.056	.047	.041	.053	.070	.080	.067	.036	.041	.056
N			9	11	11	[illegible]	12	11	12	11	13	10

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
18 MAY67 KYUSHU	9685.82	313.97	-.180	-.029	-.171	.008	-.337	-.177	.074	-.196	-.395	-.510
20 FER67 RYUKYU	9941.16	313.95	0	-.106	-.077	-.043	-.393	-.208	.048	-.261	-.456	-.466
04 JAN66 E CHINA SEA	10016.97	315.49	-.253	-.079	-.180	-.061	-.308	-.206	.133	-.321	-.395	-.512
21 MAR66 RYUKYU	10229.69	312.28	-.223	-.103	-.077	.008	-.377	-.137	.156	-.240	-.489	-.275
20 MAY66 RYUKYU	10338.94	312.48	-.280	-.118	-.104	-.220	-.436	-.202	.111	-.566	-.450	-.430
21 FER66 N.E. TAIWAN	10399.73	314.93	-.244	0	-.106	-.122	-.366	-.189	.042	-.200	-.397	-.419
16 NOV65 RYUKYU IS	10510.64	314.82	-.261	0	-.122	-.080	-.238	0	0	0	-.377	-.411
10 JUL66 SW RYUKYU	10622.43	314.18	-.166	-.209	-.212	-.163	-.373	-.267	.048	-.486	-.420	-.426
01 JULY 66 TAIWAN	10711.30	316.59	-.234	-.129	-.212	-.164	-.393	-.251	.004	-.435	0	-.335
28 MAY66 TAIWAN	10749.10	316.38	-.145	-.014	.049	-.074	-.289	.074	.161	-.230	-.326	0
23 FER67 TAIWAN I	10768.00	316.28	-.243	-.053	-.103	-.098	-.360	-.031	.123	-.191	-.365	-.230
12 MAR66 TAIWAN	10772.15	316.15	0	-.105	-.057	-.032	-.278	-.031	.132	-.268	-.399	-.170
23 MAR66 TAIWAN	10789.82	315.83	-.243	-.061	-.122	-.155	-.273	-.106	.184	-.180	-.399	-.206
AVERAGE			-.226	-.091	-.121	-.057	-.340	-.149	.103	-.298	-.406	-.397
SIGMA			.042	.054	.073	.104	.058	.107	.055	.129	.043	.146
N			11	11	13	13	13	12	12	12	12	12

E V E N T P A R A M E T E R S

13 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
18 MAY67 KYUSHU	31.100	130.700	45	23 39 15.2	.0582	.023	20
20 FEB67 RYUKYU	29.200	129.200	22	12 14 33.7	.0412	-.015	18
04 JAN66 E CHINA SEA	29.500	127.300	71	02 48 53.0	.0495	-.017	19
21 MAR66 RYUKYU	26.100	129.100	33	06 29 01.0	.0481	.020	20
20 MAY66 RYUKYU	25.400	128.300	58	02 53 47.4	.0890	-.050	19
21 FEB66 N.E. TAIWAN	26.300	125.700	183	13 18 47.0	.0518	-.032	18
16 NOV65 RYUKYU IS	25.400	125.200	77	17 05 37.9	.0778	.037	8
10 JUL66 SW RYUKYU	24.200	125.200	28	16 12 41.5	.0987	-.032	20
01 JULY 66 TAIWAN	24.800	122.500	147	05 50 39.2	.0857	-.067	15
28 MAY66 TAIWAN	24.400	122.500	33	00 03 56.8	.0913	.048	18
23 FEB67 TAIWAN I	24.200	122.500	48	14 25 43.9	.0666	.023	19
12 MAR66 TAIWAN	24.100	122.600	63	16 31 21.8	.0899	.030	19
23 MAR66 TAIWAN	23.800	122.800	51	00 04 34.7	.0832	.036	20

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66TRAVEL-TIME TABLES

REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = N. E. CHINA

DISTANCE RANGE = 9081 TO 9844 KM AZIMUTH RANGE = 327.7 TO 328.4 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
27 MAR 67 NE CHINA	9488.88	327.74	-.010	.065	.047	0	-.088	.050	.129	-.119	.054	.055
22 MAR66 N. E. CHINA	9830.31	328.38	-.034	-.041	.073	-.110	-.040	.052	.071	-.069	.178	-.040
29 MAR 66 NE CHINA	9844.21	328.40	-.124	.050	0	-.101	-.117	-.007	-.039	0	-.011	-.077
AVERAGE			-.056	.025	.060	-.105	-.084	.032	.054	-.094	.074	-.021
SIGMA			.060	.057	.018	.007	.035	.034	.085	.036	.096	.068
N			3	3	2	2	3	3	3	2	3	3

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
27 MAR 67 NE CHINA	9488.88	327.74	-.180	-.083	-.032	.142	-.088	-.193	.248	.209	.069	-.671
22 MAR66 N. E. CHINA	9830.31	328.38	-.111	-.004	0	0	0	0	0	0	0	0
29 MAR 66 NE CHINA	9844.21	328.40	-.181	-.101	-.027	.057	-.208	-.216	-.003	-.016	0	-.729
AVERAGE			-.150	-.064	-.030	.099	-.148	-.205	.122	.092	.069	-.700
SIGMA			.040	.049	.003	.060	.085	.016	.177	.153	0	.041
N			3	3	2	2	2	2	2	2	1	2

E V E N T P A R A M E T E R S

3 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
27 MAR 67 NE CHINA	38.400	116.500	61	08 58 25.5	.0535	.028	19
22 MAR66 N. E. CHINA	37.500	115.000	11	08 11 33.7	.0470	.021	12
29 MAR 66 NE CHINA	37.400	114.900	34	08 12 00.4	.0626	-.046	17

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66 TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = SEVERNAYA ZEMLYA

DISTANCE RANGE = 5337 TO 5376 KM AZIMUTH RANGE = 356.3 TO 357.9 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
09 JUN66 SEVERNAYA	5336.96	357.92	-1.514	-1.455	-1.429	-1.422	-1.483	-1.488	-1.398	2.990	-1.436	-.172
30 JUL 66 SEV ZEMLYA	5375.76	356.25	-.066	-.032	-.013	0	-.043	.030	.041	-.039	-.093	-.037
AVERAGE			-.790	-.744	-.721	-1.422	-.763	-.729	-.678	1.475	-.765	-.204
SIGMA			1.024	1.006	1.001	0	1.018	1.074	1.017	2.141	.960	5.893
N			2	2	2	1	2	2	2	2	2	2

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
09 JUN66 SEVERNAYA	5336.96	357.92	3.429	5.269	-4.123	-2.968	-5.979	-1.966	5.059	-6.740	-8.957	.460
30 JUL 66 SEV ZEMLYA	5375.76	356.25	-.167	-.155	-.096	.048	-.193	-.512	-.394	-.224	0	-.645
AVERAGE			1.631	2.557	-2.109	-1.460	-3.086	-1.239	2.332	-3.482	-8.957	-.093
SIGMA			2.542	3.836	2.848	2.132	4.092	1.028	3.856	4.607	0	.782
N			2	2	2	2	2	2	2	2	1	2

E V E N T P A R A M E T E R S

2 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
09 JUN66 SEVERNAYA	82.300	92.900	33	06 57 52.0	1.8838	-.514	20
30 JUL 66 SEV ZEMLYA	84.500	104.200	29	20 32 00.7	1.9915	.571	18

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = LAKE BAIKAL - MONGOLIA
DISTANCE RANGE = 8654 TO 9155 KM AZIMUTH RANGE = 340.2 TO 341.1 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
11 FEB67 LAKE BAIKAL	8654.42	340.18	.065	0	-.012	-.045	.171	.198	.064	-.147	.316	.051
30 AUG66 LAKE BAIKAL	8731.14	341.13	.113	.127	.082	.031	.264	.164	.125	-.069	.366	.152
05 JAN67 MONGOLIA	9144.36	340.78	0	.074	-.014	-.062	.256	.128	.086	-.119	.208	0
18 JAN67 MONGOLIA	9144.36	340.78	.091	.175	.106	-.102	.155	.208	.037	-.019	0	.044
05 JAN67 MONGOLIA	9146.88	340.84	.022	.005	-.064	-.192	.106	.209	.147	-.120	.329	.185
20 JAN67 MONGOLIA	9154.83	340.74	.100	.115	.077	-.053	.064	.218	.038	-.160	.236	.116
	AVERAGE		.078	.099	.022	-.070	.169	.187	.083	-.106	.291	.110
	SIGMA		.036	.064	.068	.074	.080	.035	.046	.052	.066	.062
	N		5	5	6	6	6	6	6	6	5	5

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
11 FEB67 LAKE BAIKAL	8654.42	340.18	0	.074	.287	.297	-.280	0	.663	-.224	-.215	-.355
30 AUG66 LAKE BAIKAL	8731.14	341.13	-.188	.056	.366	.345	0	-.281	.671	-.058	-.228	-.258
05 JAN67 MONGOLIA	9144.36	340.78	-.341	-.062	.381	.201	-.157	-.370	.556	-.158	-.274	-.449
18 JAN67 MONGOLIA	9144.36	340.78	0	-.003	.389	.223	0	-.292	.533	-.211	-.191	-.434
05 JAN67 MONGOLIA	9146.88	340.84	-.161	.096	.230	.077	-.355	-.525	.498	0	-.325	-.507
20 JAN67 MONGOLIA	9154.83	340.74	-.199	-.005	.285	.145	-.259	-.382	.567	-.204	-.255	-.540
	AVERAGE		-.222	.026	.323	.215	-.263	-.370	.581	-.171	-.248	-.424
	SIGMA		.080	.059	.065	.098	.081	.098	.070	.068	.048	.103
	N		4	6	6	6	4	5	6	5	6	6

E V E N T P A R A M E T E R S

6 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
11 FEB67 LAKE BAIKAL	52.000	106.200	5	09 27 29.6	.0466	.006	17
30 AUG66 LAKE BAIKAL	51.700	104.400	33	06 10 33.4	.0791	.063	19
05 JAN67 MONGOLIA	48.100	102.900	33	23 58 21.4	.0591	-.014	18
18 JAN67 MONGOLIA	48.100	102.900	33	21 49 25.8	.0536	.012	17
05 JAN67 MONGOLIA	48.100	102.800	33	00 14 40.4	.0882	-.044	19
20 JAN67 MONGOLIA	48.000	102.900	33	01 57 23.1	.0493	-.021	20

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RELATIVE TRAVEL-TIME ANOMALIES

HERRIN68TRAVEL-TIME TABLES — REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = KAZAKH

DISTANCE RANGE = 9310 TO 9332 KM AZIMUTH RANGE = 357.2 TO 357.3 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
05 AUG66 E KAZAKH	9310.12	357.25	.033	-.023	-.034	-.031	.035	.148	.011	-.136	.099	0
24 DEC65 KAZAKH	9310.12	357.25	0	0	0	0	.035	.098	.051	-.158	.049	-.200
20 MAR66 KAZAKH	9310.12	357.25	.103	-.003	-.034	-.041	.075	.138	.001	-.066	.139	-.290
29 JUN66 E. KAZAKH	9310.12	357.25	.103	.127	-.014	.029	.055	.048	-.089	-.056	.109	-.100
21 JUL66 KAZAKH	9310.48	357.32	.044	.077	-.015	-.041	.088	.189	.051	-.186	.100	-.129
21 NOV65 KAZAKH	9320.86	357.18	0	0	0	0	.024	.187	-.008	-.166	.036	-.159
13 FEB66 KAZAKH	9320.86	357.18	.062	.017	-.064	-.051	.034	0	-.048	-.126	.046	-.149
21 APR66 KAZAKH	9321.24	357.25	-.007	-.023	-.054	-.141	.054	.068	-.078	-.156	.078	0
20 APR 67 KAZAKH	9331.98	357.18	-.018	-.023	-.083	-.002	.002	.097	.553	-.186	-.035	-.217
AVERAGE			.046	.021	-.043	-.040	.042	.122	.052	-.137	.069	-.178
SIGMA			.048	.059	.026	.053	.023	.052	.194	.048	.052	.064
N			7	7	7	7	9	8	9	9	9	7

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
05 AUG66 E KAZAKH	9310.12	357.25	-.304	.074	.264	-.145	-.540	-.715	.222	-.521	-.711	-.376
24 DEC65 KAZAKH	9310.12	357.25	-.334	.054	.214	-.143	-.540	-.725	.082	-.531	-.781	-.446
20 MAR66 KAZAKH	9310.12	357.25	-.354	-.076	.224	-.045	-.520	-.605	.192	-.511	-.721	-.406
29 JUN66 E. KAZAKH	9310.12	357.25	-.244	-.036	.194	-.155	-.520	-.575	.152	-.501	0	-.426
21 JUL66 KAZAKH	9310.48	357.32	-.265	.063	.265	-.092	-.560	-.678	0	-.509	-.655	-.459
21 NOV65 KAZAKH	9320.86	357.18	-.341	-.058	.119	-.107	-.494	-.683	.042	0	-.841	-.489
13 FEB66 KAZAKH	9320.86	357.18	-.311	.012	.159	-.177	-.564	-.633	.192	-.507	-.701	-.379
21 APR66 KAZAKH	9321.24	357.25	-.342	-.028	.190	-.154	-.815	-.636	.076	-.514	-.715	-.492
20 APR 67 KAZAKH	9331.98	357.18	-.330	.030	.144	-.195	-.879	-.644	.328	-.480	-.885	-.458
AVERAGE			-.314	.004	.197	-.135	-.648	-.655	.135	-.507	-.724	-.428
SIGMA			.038	.055	.051	.046	.038	.050	.045	.021	.056	.039
N			9	9	9	9	9	9	8	8	8	9

EVENT PARAMETERS

9 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
05 AUG66 E KAZAKH	49.900	78.000	0	03 57 58.1	.0405	.010	19
24 DEC65 KAZAKH	49.900	78.000	0	04 59 58.3	.0320	-.016	18
20 MAR66 KAZAKH	49.900	78.000	0	05 49 58.2	.0534	.011	20
29 JUN66 E. KAZAKH	49.900	78.000	0	06 57 58.1	.0618	.022	19
21 JUL66 KAZAKH	49.900	77.900	0	03 57 57.8	.0432	.022	19
21 NOV65 KAZAKH	49.800	78.100	0	04 57 57.9	.0588	-.024	15
13 FEB66 KAZAKH	49.800	78.100	0	04 57 57.7	.0352	-.003	19
21 APR66 KAZAKH	49.800	78.000	0	03 57 58.0	.0529	-.034	19
20 APR 67 KAZAKH	49.700	78.100	0	04 07 57.6	.1237	.003	20

11 15 67

R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66TRAVEL-TIME TABLES REFERENCE STATION AB

INCLUDING ELLIPTICITY

ANOMALY REGION = SINKIANG

DISTANCE RANGE = 9902 TO 10717 KM AZIMUTH RANGE = 348.9 TO 352.8 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
13 NOV65 SINKIANG	9901.79	349.89	0	0	0	-.136	.042	.041	-.090	-.244	.130	-.148
25 APR 67 SINKIANG	9967.12	350.39	.107	.018	-.036	-.048	.033	.138	-.039	-.150	.148	-.059
19 FEB 67 SINKIANG	10149.51	352.77	-.079	-.042	.009	-.140	-.016	-.018	-.147	-.273	.099	-.306
10 FEB 67 SINKIANG	10163.87	350.71	-.006	-.077	.020	-.180	.008	-.182	-.250	0	.175	-.425
14 OCT 66 SINKIANG	10716.58	348.90	.027	-.059	.002	-.185	-.053	-.051	-.150	-.235	.132	-.335
AVERAGE			.012	-.040	-.001	-.130	.003	-.010	-.135	-.226	.137	-.255
SIGMA			.077	.041	.024	.047	.039	.111	.079	.053	.028	.148
N			4	4	4	5	5	5	5	4	5	5

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
13 NOV65 SINKIANG	9901.79	349.89	-.341	-.141	.169	-.088	-.523	-.726	.286	-.448	-.501	-.710
25 APR 67 SINKIANG	9967.12	350.39	-.256	-.080	.267	.011	-.456	-.588	.358	-.357	-.412	-.621
19 FEB 67 SINKIANG	10149.51	352.77	-.486	-.179	.144	-.294	-.615	-.785	.269	-.729	-.792	-.813
10 FEB 67 SINKIANG	10163.87	350.71	-.492	-.228	.063	-.389	-.617	0	.192	-.872	-.811	-.811
14 OCT 66 SINKIANG	10716.58	348.90	-.437	-.115	.164	-.423	-.679	-.585	.279	-.883	-.742	-.764
AVERAGE			-.403	-.149	.181	-.237	-.578	-.666	.283	-.817	-.651	-.744
SIGMA			.102	.057	.073	.190	.088	.093	.088	.211	.183	.080
N			5	5	5	5	5	4	5	5	5	5

E V E N T P A R A M E T E R S

5 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
13 NOV65 SINKIANG	43.800	87.800	59	04 33 53.0	.0808	.048	17
25 APR 67 SINKIANG	43.300	87.000	34	10 30 37.8	.1387	.112	20
19 FEB 67 SINKIANG	42.000	83.500	33	20 08 20.9	.0829	-.045	20
10 FEB 67 SINKIANG	41.600	86.200	23	05 51 01.9	.1171	-.085	18
14 OCT 66 SINKIANG	36.400	87.500	24	01 04 43.3	.0850	-.030	20

11 15 67 RELATIVE TRAVEL-TIME ANOMALIES

HERRIN66 TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = HINDU KUSH AREA

DISTANCE RANGE = 10306 TO 10992 KM AZIMUTH RANGE = .5 TO 360.0 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
30 APR66 KIRGIZ SSR	10306.15	1.27	.068	.019	.009	.022	.066	.008	-.065	-.117	.056	-.222
02 FEB67 SINKIANG	10450.48	358.67	-.071	-.100	-.003	-.132	.037	-.077	-.180	-.091	.142	-.293
11 MAY 67 SINKIANG	10485.29	359.98	-.030	-.074	-.094	-.178	.007	-.046	-.219	-.117	.031	-.421
28 JAN66 TOZHK-SNKG	10496.15	.53	-.017	-.111	.004	-.180	-.042	-.020	-.179	-.212	-.021	-.203
31 MAR66 HINDU KUSH	10513.49	2.42	0	0	0	0	0	0	0	0	0	0
16 NOV65 AFGHAN-USSR	10514.70	2.10	0	0	0	-.035	.060	-.013	-.132	-.251	-.009	0
04 JUN66 HINDU KUSH	10524.58	2.43	0	0	-.010	-.002	0	0	0	-.212	.023	-.473
06 JUN66 AFGHAN-USSR	10525.79	2.10	-.069	-.041	-.087	.046	.052	-.083	-.273	0	.153	-.402
01 OCT66 W PAKISTAN	10991.58	2.31	.012	-.081	-.038	-.044	.042	0	-.183	-.193	.047	-.227
AVERAGE			-.019	-.066	-.081	-.063	.032	-.039	-.170	-.170	.053	-.320
SIGMA			.050	.049	.048	.089	.030	.037	.057	.061	.064	.110
N			6	6	7	8	7	6	7	7	8	7

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
30 APR66 KIRGIZ SSR	10306.15	1.27	-.291	-.122	.145	-.198	-.514	-.728	.033	-.663	-.778	-.492
02 FEB67 SINKIANG	10450.48	358.67	-.445	-.090	.122	-.101	-.679	-.735	.323	-.517	-.848	-.387
11 MAY 67 SINKIANG	10485.29	359.98	-.409	-.203	.004	-.113	-.565	-.720	.151	-.527	-.771	-.590
28 JAN66 TOZHK-SNKG	10496.15	.53	-.375	-.171	.055	-.276	-.404	-.852	.193	-.558	-.818	-.501
31 MAR66 HINDU KUSH	10513.49	2.42	0	0	.169	-.289	-.720	-.645	.196	-.761	-.882	-.312
16 NOV65 AFGHAN-USSR	10514.70	2.10	-.469	-.143	.081	-.395	-.686	0	.185	-.813	-.957	-.492
04 JUN66 HINDU KUSH	10524.58	2.43	-.390	0	.179	-.205	-.806	-.686	.138	-.728	-.922	-.370
06 JUN66 AFGHAN-USSR	10525.79	2.10	-.391	-.060	.210	-.317	-.610	-.625	.208	-.737	-.782	-.339
01 OCT66 W PAKISTAN	10991.58	2.31	-.404	-.093	.166	-.306	0	-.723	.177	-.651	-.814	-.401
AVERAGE			-.397	-.126	.126	-.258	-.623	-.717	.170	-.662	-.841	-.432
SIGMA			.053	.050	.067	.089	.127	.066	.077	.108	.067	.092
N			8	7	9	9	8	8	9	9	9	8

E V E N T P A R A M E T E R S

9 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
30 APR66 KIRGIZ SSR	41.000	72.100	19	13 41 09.1	.0760	.041	20
02 FEB67 SINKIANG	39.700	75.500	39	07 37 54.9	.0672	.017	20
11 MAY 67 SINKIANG	39.400	73.800	21	14 50 58.8	.0821	-.017	20
28 JAN66 TOZHK-SNKG	39.300	73.100	20	08 42 07.2	.0841	-.007	20
31 MAR66 HINDU KUSH	36.400	70.800	280	23 38 00.5	.0783	-.012	8
16 NOV65 AFGHAN-USSR	36.400	71.200	241	01 03 55.7	.0777	-.045	15
04 JUN66 HINDU KUSH	36.300	70.800	207	05 11 54.2	.0804	-.027	14
06 JUN66 AFGHAN-USSR	36.300	71.200	225	07 46 16.2	.0683	.014	19
01 OCT66 W PAKISTAN	34.800	71.000	25	07 38 29.0	.0326	.010	18

11 15 67

RELATIVE TRAVEL-TIME ANOMALIES

HERRIN68TRAVEL-TIME TABLES — REFERENCE STATION 'A0

INCLUDING ELLIPTICITY

ANOMALY REGION = NORTHERN MID-ATLANTIC RIDGE

DISTANCE RANGE = 4778 TO 5087 KM AZIMUTH RANGE = 49.2 TO 54.4 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
19 JUL66 N ATL RIDGE	4778.38	51.27	-.021	-.174	.010	.042	0	-.176	0	.019	-.108	-.504
09 MAR67 N ATLANTIC	4821.12	49.84	0	-.127	.015	.025	-.063	-.140	-.313	.101	-.132	0
19 JUL66 N ATL OCEAN	4839.34	51.30	0	0	0	-.050	0	0	0	0	-.149	0
9 MAR 67 N ATL OC.	4858.92	50.29	0	-.133	.046	.020	.028	-.006	-.206	.166	-.136	-.346
09 MAR67 N ATLANTIC	4861.17	50.13	-.048	-.265	-.014	.012	-.070	-.139	-.286	-.002	-.147	-.461
10 MAR67 N ATLANTIC	4862.58	50.43	.043	-.182	-.014	.019	-.113	-.124	-.325	.084	-.196	-.381
13 JUL66 N ATL OCEAN	4868.67	49.17	-.069	-.194	-.011	.061	-.061	-.123	-.388	-.028	-.142	0
9 MAR 67 N ATL OC.	4870.70	50.24	0	-.164	-.024	-.020	-.032	-.097	-.396	.037	-.218	-.327
19 JUL66 N ATLNTC OC	4878.89	51.27	-.078	0	-.096	-.000	0	0	0	.042	0	-.483
08 APR66 N ATL OCEAN	5086.57	54.36	-.041	-.285	-.043	.044	-.098	-.192	-.429	.017	-.145	-.503
AVERAGE			-.036	-.190	-.015	.015	-.058	-.125	-.335	.048	-.153	-.429
SIGMA			.043	.057	.040	.032	.046	.057	.076	.059	.034	.076
N			6	8	9	10	7	8	7	9	9	7

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
19 JUL66 N ATL RIDGE	4778.38	51.27	-.134	-.006	.008	-.067	-.439	0	.260	-.531	0	-.361
09 MAR67 N ATLANTIC	4821.12	49.84	0	0	-.012	-.069	-.411	0	.241	-.463	-.874	-.317
19 JUL66 N ATL OCEAN	4839.34	51.30	0	0	0	-.128	0	0	0	-.689	0	0
9 MAR 67 N ATL OC.	4858.92	50.29	.018	.017	-.010	-.035	-.389	0	.253	-.409	0	-.313
09 MAR67 N ATLANTIC	4861.17	50.13	0	-.077	.046	-.087	-.396	0	.293	-.609	-.974	-.383
10 MAR67 N ATLANTIC	4862.58	50.43	-.091	-.028	-.057	-.036	-.441	0	.199	-.463	-.847	-.310
13 JUL66 N ATL OCEAN	4868.67	49.17	-.170	-.051	-.026	-.057	-.433	-.445	.271	-.439	-.763	-.377
9 MAR 67 N ATL OC.	4870.70	50.24	0	-.051	-.041	-.131	-.448	0	.126	-.497	0	-.357
19 JUL66 N ATLNTC OC	4878.89	51.27	-.190	0	0	-.138	-.493	0	0	-.539	0	0
08 APR66 N ATL OCEAN	5086.57	54.36	-.168	-.054	.001	-.122	-.419	-.360	.256	-.573	-.748	-.330
AVERAGE			-.122	-.036	-.011	-.087	-.430	-.402	.228	-.518	-.841	-.343
SIGMA			.077	.032	.032	.040	.031	.061	.047	.084	.092	.030
N			6	7	8	10	9	2	8	10	5	8

EVENT PARAMETERS

10 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
19 JUL66 N ATL RIDGE	55.700	-36.300	33	10 08 37.0	.0328	.001	16
09 MAR67 N ATLANTIC	56.500	-35.100	33	20 23 04.	.0322	.018	15
19 JUL66 N ATL OCEAN	55.500	-35.400	33	00 20 11.0	.1044	-.066	4
9 MAR 67 N ATL OC.	56.100	-34.700	33	20 02 43.5	.0823	.067	17
09 MAR67 N ATLANTIC	56.200	-34.600	33	20 34 48.	.0512	-.020	18
10 MAR67 N ATLANTIC	56.000	-34.700	33	11 14 38.	.0377	.009	19
13 JUL66 N ATL OCEAN	56.800	-34.100	24	10 34 02.8	.0430	-.032	19
9 MAR 67 N ATL OC.	56.100	-34.500	33	22 18 00.7	.0494	-.013	16
19 JUL66 N ATLNTC OC	55.400	-34.800	33	02 05 06.0	.0536	-.044	9
08 APR66 N ATL OCEAN	52.700	-33.200	33	05 02 40.4	.0515	-.018	20

11 15 67

R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRINGS TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = ICELAND

DISTANCE RANGE = 5059 TO 5384 KM AZIMUTH RANGE = 36.5 TO 41.4 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
05 MAY 66 ICELAND	5050.56	41.27	-.063	-.126	-.085	-.070	-.052	-.171	-.200	0	-.129	0
05 MAY 66 ICELAND	5062.16	41.40	-.152	-.185	-.065	-.083	-.063	-.209	-.279	-.068	-.204	0
01 APR 67 ICELAND	5303.90	36.51	-.094	-.125	-.081	-.103	-.047	-.008	-.136	-.008	-.054	-.304
AVERAGE			-.103	-.145	-.020	-.036	-.067	-.159	-.205	-.038	-.127	-.304
SIGMA			.046	.034	.092	.049	.018	.097	.072	.042	.075	0
N			3	3	3	3	3	3	3	2	3	1

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
05 MAY 66 ICELAND	5058.56	41.27	0	-.050	-.112	-.040	-.344	-.294	-.221	-.426	-.504	-.555
05 MAY 66 ICELAND	5062.16	41.40	-.202	-.175	-.097	-.101	-.357	-.453	.039	-.399	-.582	-.701
01 APR 67 ICELAND	5383.90	36.51	-.062	-.027	-.107	-.149	-.402	-.332	-.112	-.582	-.445	-.480
AVERAGE			-.132	-.084	-.105	-.070	-.360	-.343	-.031	-.469	-.577	-.581
SIGMA			.099	.079	.000	.090	.030	.000	.076	.098	.070	.109
N			2	3	3	3	3	3	3	3	3	3

E V E N T P A R A M E T E R S

3 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
05 MAY 66 ICELAND	61.500	-27.500	33	19 52 41.1	.0506	.039	17
05 MAY 66 ICELAND	61.400	-27.500	33	19 16 31.9	.0631	-.035	19
01 APR 67 ICELAND	63.700	-18.900	2	19 41 [illegible]0.4	.0695	.000	20

11 15 67

R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = GREENLAND SEA

DISTANCE RANGE = 5774 TO 5804 KM AZIMUTH RANGE = 19.6 TO 19.9 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	A1	B2	A3	B4	C1	C2	C3	C4	D1	D2
30 NOV 66 GRNLND SEA	5779.09	19.61	.011	-.094	.031	-.028	-.108	-.194	-.180	-.033	-.137	0
13 JUN 66 GRNLND SEA	5799.31	19.87	0	.009	.020	.039	-.161	-.090	-.067	.043	-.084	-.179
20 SEP66 GREENLAND S	5802.94	19.68	0	-.123	0	.070	-.131	-.123	-.108	0	-.169	0
AVERAGE			.011	-.069	.026	.027	-.133	-.136	-.148	.005	-.130	-.179
SIGMA			0	.069	.006	.050	.026	.053	.071	.054	.043	0
N			1	3	2	3	3	3	3	2	3	1

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
30 NOV 66 GRNLND SEA	5779.09	19.61	-.066	-.138	-.242	-.504	-.217	-.180	-.360	-.634	-.232	-.403
13 JUN 66 GRNLND SEA	5799.31	19.87	-.027	-.047	-.191	-.313	-.205	-.265	0	-.569	-.269	-.405
20 SEP66 GREENLAND S	5802.94	19.68	-.144	-.173	0	-.449	-.136	-.353	0	-.616	-.369	0
AVERAGE			-.079	-.119	-.217	-.422	-.186	-.266	-.360	-.607	-.290	-.604
SIGMA			.059	.065	.036	.098	.044	.086	0	.033	.071	.002
N			3	3	2	3	3	3	1	3	3	2

E V E N T P A R A M E T E R S

J EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
30 NOV 66 GRNLND SEA	73.400	7.000	33	13 00 40.0	.0411	-.011	19
13 JUN 66 GRNLND SEA	73.100	7.200	63	13 19 35.0	.0495	.031	18
20 SEP66 GREENLAND S	73.200	7.600	33	23 06 38.0	.0524	-.027	13

11 15 67

R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN68TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = AZORES IS

DISTANCE RANGE = 6005 TO 6521 KM AZIMUTH RANGE = 65.3 TO 70.3 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
04 APR66 AZORES IS 2	6004.81	70.11	-.045	-.163	.010	.150	.122	-.198	-.346	.172	-.005	-.314
04 APR66 AZORES IS 1	6024.69	70.25	0	-.262	-.169	.108	-.032	-.168	-.393	.172	-.089	-.421
04 JUL66 AZORES	6476.86	65.25	0	-.218	-.119	0	0	-.121	-.356	.147	0	-.401
04 JUL 66 AZORES IS	6513.74	67.16	.038	-.103	.003	.114	.126	-.126	-.342	.129	.077	-.370
05 JUL 66 AZORES IS	6521.14	66.95	-.011	-.145	-.058	.146	.249	-.058	-.275	.181	.039	-.335
AVERAGE			-.008	-.178	-.067	-.129	.116	-.134	-.342	.160	.005	-.368
SIGMA			.042	.062	.077	.021	.115	.053	.043	.029	.071	.044
N			3	5	5	4	4	5	5	5	4	5

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
04 APR66 AZORES IS 2	6004.81	70.11	-.244	.033	.044	-.162	-.486	-.401	.121	-.771	-.660	-.280
04 APR66 AZORES IS 1	6024.69	70.25	-.229	.038	-.007	-.301	-.434	-.340	0	-.746	-.661	-.302
04 JUL66 AZORES	6476.86	65.25	0	0	.136	-.284	-.510	0	0	-.874	0	0
04 JUL 66 AZORES IS	6513.74	67.16	-.215	.028	.090	-.143	-.347	-.252	.085	-.594	0	-.267
05 JUL 66 AZORES IS	6521.14	66.95	-.167	0	.081	0	-.389	-.286	.215	-.677	0	-.246
AVERAGE			-.212	.033	.069	-.223	-.433	-.320	.140	-.732	-.661	-.274
SIGMA			.032	.005	.054	.062	.067	.065	.067	.105	.001	.024
N			4	3	5	4	5	4	3	5	2	4

E V E N T P A R A M E T E R S

5 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
04 APR66 AZORES IS 2	38.200	-31.300	33	20 48 38.8	.0410	-.006	20
04 APR66 AZORES IS 1	38.000	-31.200	33	20 44 56.3	.0637	-.044	18
04 JUL66 AZORES	39.000	-23.900	33	23 49 53.0	.0671	-.035	10
04 JUL 66 AZORES IS	37.500	-24.800	33	12 15 28.1	.0577	.030	19
05 JUL 66 AZORES IS	37.000	-24.600	12	05 09 03.6	.0541	.042	17

11 15 67

R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66 TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = YUGOSLAVIA, ALBANIA, GREECE, MEG, SEA

DISTANCE RANGE = 8759 TO 9399 KM AZIMUTH RANGE = 37.0 TO 40.1 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	G1	D1
20 AUG66 YUGOSLAVIA	8759.31	38.38	-.198	-.262	-.020	.015	-.114	-.230	-.360	.017	-.243	-.655
06 AUG66 YUGOSLAVIA	8777.90	38.32	-.060	-.332	.052	.055	-.097	-.432	-.300	.070	-.207	-.645
8 DEC 66 YUGOSLAVIA	8782.65	38.26	-.030	-.313	.022	.075	-.027	0	-.378	.029	0	0
25 MAY 66 ALBANIA	8985.61	38.61	0	-.348	-.020	.015	-.041	-.369	-.372	.149	-.223	-.601
09 AUG66 ALBANIA	9003.97	38.72	-.135	-.267	.000	.014	0	0	-.340	.060	-.185	0
16 AUG66 ALBANIA	9003.97	38.72	-.079	-.207	.060	.104	-.093	-.339	0	.158	-.165	-.578
9 FEB 67 GREECE-ALB	9050.68	38.64	-.048	-.298	.082	.063	-.047	-.432	-.358	.150	-.233	-.588
1 MAY 67 GREECE	9125.93	38.16	-.165	-.319	-.013	-.047	-.034	-.301	-.355	.086	-.491	-.566
29 OCT 66 GREECE	9167.51	38.50	-.068	-.327	.068	.049	-.040	-.330	-.200	.124	-.106	-.557
3 APR 66 GREECE	9200.33	38.41	-.061	-.297	.010	.048	-.064	-.203	-.277	.055	-.204	-.577
4 MAY 66 GREECE	9205.27	38.16	-.143	0	.022	.029	-.075	0	-.398	.010	-.298	0
05 FEB66 GREECE 1	9205.41	37.98	-.063	-.289	.032	.050	-.034	-.348	-.239	.100	-.150	-.595
05 FEB66 GREECE 2	9214.82	37.84	-.105	-.300	.063	.080	-.075	-.311	-.318	.122	-.253	9
11 JUN66 S. GREECE	9325.04	39.44	-.160	-.289	.035	.047	-.006	-.310	-.391	.108	-.206	9
04 JUN66 MEDITRN SEA	9398.66	40.07	0	0	.087	.040	0	0	0	.155	-.160	-.564
AVERAGE			-.101	-.296	.032	.042	-.051	-.328	-.330	.084	-.217	-.576
SIGMA			.053	.036	.036	.035	.033	.071	.040	.050	.072	.052
N			13	13	15	15	13	11	13	15	14	10

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
20 AUG66 YUGOSLAVIA	8759.31	38.38	-.075	-.119	-.144	-.579	-.430	-.295	-.243	-.772	-.582	-.548
06 AUG66 YUGOSLAVIA	8777.90	38.32	-.071	-.070	0	0	-.694	0	0	-.782	-.587	-.557
8 DEC 66 YUGOSLAVIA	8782.65	38.26	-.221	0	-.229	-.660	0	-.286	-.211	0	-.486	-.372
25 MAY 66 ALBANIA	8985.61	38.61	-.071	.035	9	-.554	0	-.205	-.178	0	-.535	-.368
09 AUG66 ALBANIA	9003.97	38.72	-.189	0	0	-.531	0	0	-.109	-.813	-.573	-.438
16 AUG66 ALBANIA	9003.97	38.72	-.099	.100	-.107	-.481	0	-.197	0	0	-.593	-.368
9 FEB 67 GREECE-ALB	9050.68	38.64	-.083	.009	-.266	-.542	-.710	-.167	-.105	-.822	-.428	-.408
1 MAY 67 GREECE	9125.93	38.16	-.118	-.067	-.182	-.540	-.495	-.205	-.213	0	-.542	-.325
29 OCT 66 GREECE	9167.51	38.50	-.092	.011	-.152	-.559	-.481	-.180	-.180	-.687	-.499	-.388
3 APR 66 GREECE	9200.33	38.41	-.036	-.011	0	-.490	-.529	-.190	-.416	-.645	-.603	-.470
4 MAY 66 GREECE	9205.27	38.16	-.183	-.086	-.141	-.635	-.571	-.369	-.307	-.783	-.735	-.503
05 FEB66 GREECE 1	9205.41	37.98	-.142	-.022	-.198	-.564	-.596	-.262	-.159	-.788	-.635	-.378
05 FEB66 GREECE 2	9214.82	37.84	-.129	-.060	-.219	-.533	-.575	-.264	-.248	-.895	-.505	-.431
11 JUN66 S. GREECE	9325.04	39.44	-.186	-.077	-.151	-.563	0	-.281	-.311	-.722	-.561	-.425
04 JUN66 MEDITRN SEA	9398.66	40.07	-.113	0	-.154	-.479	-.545	-.237	-.306	-.784	-.572	-.428
AVERAGE			-.120	-.030	-.177	-.551	-.575	-.241	-.237	-.768	-.598	-.427
SIGMA			.054	.062	.047	.052	.046	.058	.041	.064	.073	.068
N			15	12	11	14	10	13	13	11	15	15

E V E N T P A R A M E T E R S

15 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
20 AUG66 YUGOSLAVIA	42.300	18.600	22	12 05 18.9	.0629	-.032	20
06 AUG66 YUGOSLAVIA	42.200	18.800	33	02 31 08.0	.0552	-.023	16
8 DEC 66 YUGOSLAVIA	42.200	18.900	24	11 31 18.0	.0607	-.013	14
25 MAY 66 ALBANIA	40.500	19.900	33	09 06 59.0	.0440	.007	16
09 AUG66 ALBANIA	40.300	19.900	33	03 34 14.3	.0495	-.005	13
16 AUG66 ALBANIA	40.300	19.900	03	03 53 42.8	.0621	.050	16
9 FEB 67 GREECE-ALB	40.000	20.300	3	14 08 18.7	.0643	.005	29
1 MAY 67 GREECE	39.700	21.300	15	07 08 00.5	.0627	-.008	19
29 OCT 66 GREECE	39.200	21.200	20	02 39 29.4	.0609	.043	20
3 APR 66 GREECE	39.000	21.500	25	11 36 24.8	.0742	.020	18
4 MAY 66 GREECE	39.100	21.800	41	06 36 59.8	.0764	-.056	17
05 FEB66 GREECE 1	39.200	22.090	88	02 01 48.3	.0416	.008	20
05 FEB66 GREECE 2	39.200	22.200	45	02 58 00.8	.0332	-.004	19
11 JUN66 S. GREECE	37.500	21.200	51	12 05 03.2	.0394	-.010	18
04 JUN66 MEDITRN SEA	36.600	21.000	80	06 16 57.4	.0414	.015	14

11 15 67

R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66TRAVEL-TIME TABLES REFERENCE STATION AO

INCLUDING ELLIPTICITY

ANOMALY REGION = MISC. RUMANIA, BULGARIA, TURKEY
DISTANCE RANGE = 8701 TO 9981 KM AZIMUTH RANGE = 29.1 TO 34.8 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
15 OCT66 RUMANIA	8701.35	31.75	-.100	-.212	.046	-.309	-.141	-.269	-.266	.039	-.268	-.674
2 OCT 66 RUMANIA	8789.40	31.63	-.096	-.222	.028	-.109	-.143	-.207	-.169	.070	-.273	-.626
08 FEB66 GREECE-BULG	9139.45	34.77	0	0	0	0	0	0	0	0	0	0
7 APR 67 TURKEY	9981.22	29.06	-.081	-.138	.099	-.004	.073	-.129	-.197	.185	-.130	-.943
AVERAGE			-.095	-.191	.058	-.038	-.070	-.200	-.196	.078	-.224	-.614
SIGMA			.013	.046	.037	.062	.124	.068	.061	.844	.081	.066
N			3	3	3	3	3	3	3	3	3	3

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
15 OCT66 RUMANIA	8701.35	31.75	-.113	-.087	-.231	-.639	-.531	-.382	-.405	-1.011	-.699	-.613
2 OCT 66 RUMANIA	8789.40	31.63	-.130	-.086	-.215	-.598	-.548	-.365	0	0	-.666	-.600
08 FEB66 GREECE-BULG	9139.45	34.77	0	0	-.329	0	-.576	0	-.237	0	-.649	-.473
7 APR 67 TURKEY	9981.22	29.06	-.160	-.083	-.106	-.962	-.583	-.383	0	0	-.587	-.479
AVERAGE			-.134	-.005	-.220	-.600	-.560	-.377	-.321	-1.011	-.640	-.543
SIGMA			.024	.002	.091	.039	.024	.010	.119	0	.836	.077
N			3	3	4	3	4	3	2	1	4	4

E V E N T P A R A M E T E R S

4 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
15 OCT66 RUMANIA	45.700	26.300	100	06 59 16.9	.0447	-.030	20
2 OCT 66 RUMANIA	45.700	26.500	140	11 21 44.9	.0351	-.009	18
08 FEB66 GREECE-BULG	41.400	25.100	33	20 08 06.3	.0777	.004	5
7 APR 67 TURKEY	37.400	36.200	39	18 33 31.3	.0652	.042	18

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66 TRAVEL-TIME TABLES

INCLUDING ELLIPTICITY

REFERENCE STATION A0

ANOMALY REGION = CAUCASUS

DISTANCE RANGE = 9316 TO 9988 KM AZIMUTH RANGE = 18.9 TO 25.3 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
12 JUL66 W. CAUCASUS	9315.67	25.32	-.001	-.138	-.007	-.034	-.172	-.254	-.249	-.031	-.032	-.408
02 MAR66 E. CAUCASUS	9709.17	20.15	-.011	-.146	.008	.018	-.136	-.167	-.181	-.070	-.081	-.410
30 JAN 67 W CAUCASUS	9874.85	21.94	-.079	-.164	.004	-.124	-.167	-.128	-.159	-.078	-.124	-.411
20 APR66 E CAUCASUS	9907.88	18.87	-.015	-.149	.028	.066	-.140	-.174	-.165	.011	-.086	0
AVERAGE			-.027	-.149	.008	-.019	-.154	-.181	-.189	-.040	-.081	-.410
SIGMA			.036	.011	.014	.081	.018	.053	.041	.041	.038	.002
N			4	4	4	4	4	4	4	4	4	3

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
12 JUL66 W. CAUCASUS	9315.67	25.32	-.084	0	0	-.432	-.363	-.394	-.346	-.859	-.731	-.684
02 MAR66 E. CAUCASUS	9709.17	20.15	-.154	-.080	-.179	-.453	-.452	-.454	-.399	-.870	-.843	-.562
30 JAN 67 W CAUCASUS	9874.85	21.94	-.107	-.154	-.237	-.515	-.536	-.467	-.398	-.738	-.756	-.638
20 APR66 E CAUCASUS	9907.88	18.87	-.237	-.046	-.086	-.371	-.482	-.586	-.315	0	-.878	-.960
AVERAGE			-.146	-.093	-.167	-.443	-.503	-.475	-.365	-.822	-.802	-.611
SIGMA			.067	.055	.076	.059	.127	.081	.041	.073	.070	.060
N			4	3	3	4	4	4	4	3	4	4

E V E N T P A R A M E T E R S

4 EPICENTERS	LAYITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
12 JUL66 W. CAUCASUS	44.400	37.400	26	18 53 08.5	.0570	.011	18
02 MAR66 E. CAUCASUS	43.000	49.800	24	02 37 02.3	.0272	.002	20
30 JAN 67 W CAUCASUS	41.000	44.200	33	01 20 31.7	.0504	-.015	20
20 APR66 E CAUCASUS	41.700	48.200	19	16 42 03.7	.0694	.004	18

11 15 67 R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66TRAVEL-TIME TABLES REFERENCE STATION A8

INCLUDING ELLIPTICITY

ANOMALY REGION = CRETE, N, TURKEY
DISTANCE RANGE = 9606 TO 9865 KM AZIMUTH RANGE = 32.7 TO 39.2 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
07 MAY66 TURKEY	9605.95	34.74	-.054	-.242	.078	.118	.029	-.315	-.274	.109	-.203	-.512
19 NOV 66 CRETE	9670.14	39.22	-.005	-.117	.098	.076	-.102	-.338	-.389	.127	-.178	-.653
22 JAN 66 TURKEY	9705.62	33.33	-.064	-.229	.068	.044	0	0	0	0	0	0
14 APR 66 CRETE	9741.42	39.14	-.129	-.247	.012	.054	-.037	0	-.306	.059	-.278	0
28 NOV65 DODECANESE	9760.98	35.72	-.080	-.245	.053	.121	-.028	-.321	-.260	.192	-.019	-.417
8 FEB 66 DODEC IS	9763.91	35.27	-.052	-.238	-.036	.033	-.087	-.396	-.372	.014	-.212	0
11 MAR66 CRETE	9770.14	38.91	-.181	-.288	0	-.085	-.088	-.337	-.246	.019	-.243	-.516
09 MAY66 TURKEY	9804.62	39.72	-.083	-.178	.184	.183	.025	-.185	-.259	.140	-.081	-.481
21 APR66 CRETE	9807.96	37.57	-.087	-.265	-.011	.061	-.037	-.382	-.370	.045	-.178	0
9 MAY 66 CRETE	9859.91	37.37	-.099	-.336	-.050	.011	-.089	-.436	-.339	.077	-.225	-.583
9 MAY 66 CRETE	9864.55	37.38	-.040	-.256	.101	.071	.051	-.367	-.329	.158	-.186	-.605
	AVERAGE		-.058	-.239	.040	.062	-.036	-.341	-.308	.093	-.180	-.567
	SIGMA		.044	.057	.057	.040	.056	.071	.042	.061	.077	.064
	N		11	11	10	11	10	9	10	10	10	7

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	23	24	F1	F2	F3	F4
07 MAY66 TURKEY	9605.95	34.74	-.062	-.025	-.087	-.401	-.441	-.255	-.279	0	-.589	-.348
19 NOV 66 CRETE	9670.14	39.22	-.116	-.041	-.059	-.398	-.495	-.198	-.331	-.756	-.545	-.305
22 JAN 66 TURKEY	9705.62	33.33	0	0	-.263	-.272	-.683	-.312	0	-.943	-.670	-.499
14 APR 66 CRETE	9741.42	39.14	0	-.184	-.144	-.372	-.421	-.286	0	-.673	-.514	-.437
28 NOV65 DODECANESE	9760.98	35.72	-.017	.033	-.055	-.421	-.568	-.191	-.279	-.598	0	-.434
8 FEB 66 DODEC IS	9763.91	35.27	0	-.048	-.268	-.613	-.597	-.295	-.295	0	0	-.583
11 MAR66 CRETE	9770.14	38.91	0	-.041	-.245	-.546	-.711	-.415	-.344	-.826	-.614	-.464
09 MAY66 TURKEY	9804.62	39.72	-.095	.057	-.094	-.553	-.595	-.317	-.305	-.883	-.772	-.469
21 APR66 CRETE	9807.96	37.57	-.143	-.087	-.132	-.433	-.621	-.323	-.320	-.888	-.711	-.447
9 MAY 66 CRETE	9859.91	37.37	-.080	.085	-.167	-.599	-.517	-.242	-.293	-.717	-.715	-.508
9 MAY 66 CRETE	9864.55	37.38	-.058	-.024	-.067	-.473	0	-.219	-.285	-.669	-.523	-.373
	AVERAGE		-.083	-.028	-.146	-.461	-.557	-.270	-.303	-.772	-.628	-.435
	SIGMA		.041	.061	.085	.106	.088	.069	.023	.119	.093	.067
	N		7	10	11	11	10	11	9	9	9	11

E V E N T P A R A M E T E R S

11 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	ZHDCK SIGMA	AV. ERROR	NO. STA
07 MAY66 TURKEY	37.300	27.900	12	13 08 16.0	.0494	.035	19
19 NOV 66 CRETE	35.400	23.500	83	07 12 39.7	.0681	.025	20
22 JAN 66 TURKEY	37.700	30.000	23	00 23 42.7	.0948	-.025	11
14 APR 66 CRETE	34.500	24.000	83	16 51 46.0	.0710	.011	16
28 NOV65 DODECANESE	36.100	27.700	89	05 56 05.6	.0707	.052	19
8 FEB 66 DODEC IS	36.300	28.200	58	13 16 21.0	.0784	-.051	16
11 MAR66 CRETE	34.400	24.400	22	20 01 43.8	.0753	-.047	18
09 MAY66 TURKEY	37.200	31.200	125	03 51 09.4	.1789	.019	28
21 APR66 CRETE	34.800	26.000	52	06 45 29.0	.0521	-.036	19
9 MAY 66 CRETE	34.500	26.500	33	08 42 55.6	.0671	-.031	20
9 MAY 66 CRETE	34.500	26.000	83	06 08 28.5	.0556	.030	19

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HEPRIN66TRAVEL-TIME TABLES

INCLUDING ELLIPTICITY

REFERENCE STATION A0

ANOMALY REGION = EASTERN TURKEY

DISTANCE RANGE = 9951 TO 10641 KM AZIMUTH RANGE = 23.1 TO 24.9 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
20 AUG66 TURKEY	9950.81	24.91	-.038	-.089	.084	.043	-.042	-.195	-.249	-.006	-.104	-.467
19 AUG66 TURKEY 2	9967.55	24.81	-.049	-.109	.045	.003	-.013	-.196	-.269	-.015	-.127	-.478
19 AUG66 TURKEY 3	9967.55	24.81	-.049	-.129	.055	-.007	-.083	-.276	-.229	-.039	-.117	-.508
19 AUG66 TURKEY 1	9986.66	24.37	-.072	-.091	.087	-.006	-.034	-.132	-.109	-.001	-.124	-.424
07 MAR66 TURKEY	9997.00	24.41	-.083	-.201	.018	-.057	-.096	-.212	-.206	-.051	-.166	-.411
19 AUG 66 TURKEY	10017.67	24.48	-.024	-.150	.028	-.038	-.028	-.172	-.195	-.012	-.037	-.439
27 APR 66 TURKEY	10121.59	24.00	-.043	-.076	.084	-.053	-.077	-.154	-.200	-.047	-.104	-.491
14 JUN 66 TURKEY	10135.08	23.96	.017	-.117	.042	-.067	-.010	-.192	-.213	-.047	-.102	-.474
02 MAY 66 TURKEY	10139.22	24.15	-.072	-.106	.022	-.067	-.016	-.160	-.253	-.039	-.036	0
11 JAN 66 IRAQ-IRAN	10641.21	23.11	-.064	-.148	.056	-.040	-.042	-.137	-.203	.000	-.138	0
AVERAGE			-.048	-.122	.054	-.029	-.045	-.183	-.207	-.025	-.105	-.468
SIGMA			.029	.037	.026	.036	.030	.042	.040	.021	.041	.034
N			10	10	10	10	10	10	10	10	10	8

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
20 AUG66 TURKEY	9950.81	24.91	-.098	-.039	-.082	-.507	0	-.428	-.239	-.884	-.776	-.574
19 AUG66 TURKEY 2	9967.55	24.81	-.196	-.138	-.213	-.523	-.491	-.393	-.403	-.805	-.710	-.509
19 AUG66 TURKEY 3	9967.55	24.81	-.166	-.148	-.139	-.463	-.513	-.403	0	-.936	-.797	0
19 AUG66 TURKEY 1	9986.66	24.37	-.090	-.022	-.153	-.465	-.490	-.405	-.310	-.867	-.775	-.545
07 MAR66 TURKEY	9997.00	24.41	-.101	-.085	-.197	-.465	-.497	-.472	-.300	-.843	-.639	-.550
19 AUG 66 TURKEY	10017.67	24.48	-.126	-.128	-.092	-.523	-.603	-.455	-.291	-.873	-.779	-.569
27 APR 66 TURKEY	10121.59	24.00	-.127	-.110	-.175	-.443	-.620	-.463	-.458	-.930	0	-.465
14 JUN 66 TURKEY	10135.08	23.96	-.171	-.089	-.117	-.446	-.728	-.464	-.258	-.933	-.849	-.576
02 MAY 66 TURKEY	10139.22	24.15	-.162	-.078	-.242	-.467	-.623	-.531	-.194	-1.008	-.816	-.561
11 JAN 66 IRAQ-IRAN	10641.21	23.11	-.172	-.107	-.250	-.478	-.551	-.506	-.543	-.868	-.896	-.720
AVERAGE			-.137	-.095	-.166	-.478	-.565	-.452	-.325	-.895	-.782	-.563
SIGMA			.032	.041	.060	.029	.088	.045	.126	.058	.075	.089
N			10	10	10	10	9	10	9	10	9	9

E V E N T P A R A M E T E R S

10 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
20 AUG66 TURKEY	39.300	40.900	37	11 59 12.1	.0413	.020	19
19 AUG66 TURKEY 2	39.200	41.100	33	13 15 10.1	.0506	.009	20
19 AUG66 TURKEY 3	39.200	41.100	47	14 17 57.5	.0389	-.011	18
19 AUG66 TURKEY 1	39.200	41.700	26	12 22 09.6	.0428	.030	20
07 MAR66 TURKEY	39.100	41.700	13	01 16 05.8	.0519	.001	20
19 AUG 66 TURKEY	38.900	41.700	33	13 54 24.9	.0323	.006	20
27 APR 66 TURKEY	38.200	42.700	85	19 48 49.8	.0479	-.006	19
14 JUN 66 TURKEY	38.100	42.800	38	02 45 57.0	.0508	-.008	20
02 MAY 66 TURKEY	38.000	42.600	41	23 12 23.0	.0679	-.009	19
11 JAN 66 IRAQ-IRAN	34.100	45.700	84	11 20 45.7	.0755	-.034	19

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN68TRAVEL-TIME TABLES REFERENCE STATION AQ

INCLUDING ELLIPTICITY

ANOMALY REGION = N ATLANTIC RIDGE
DISTANCE RANGE = 5713 TO 5810 KM AZIMUTH RANGE = 75.9 TO 83.0 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
16 NOV65 N ATL RIDGE	5713.42	83.62	0	0	0	0	-.160	0	-.326	0	.257	-.543
15 JUL66 N ATLNTC RD	5809.58	75.90	0	-.233	0	0	0	0	0	.275	0	-.350
10 JUN 66 N ATL RUG	5716.50	80.57	0	-.145	.002	-.007	.386	-.018	-.362	.229	.374	-.385
AVERAGE			0	-.189	.002	-.007	.113	-.018	-.345	.252	.316	-.426
SIGMA			0	.003	0	0	.386	0	.024	.033	.003	.103
N			0	2	1	1	2	1	2	2	2	3

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
16 NOV65 N ATL RIDGE	5713.42	83.62	-.210	.521	0	0	-.438	.073	.238	-.930	-.531	0
15 JUL66 N ATLNTC RD	5809.58	75.90	0	0	0	-.243	0	0	0	0	-.610	0
10 JUN 66 N ATL RUG	5716.50	80.57	-.185	.417	.235	-.309	-.486	-.003	0	-.963	-.566	-.443
AVERAGE			-.187	.489	.235	-.306	-.512	.035	.238	-.959	-.509	-.443
SIGMA			.032	.074	0	.089	.037	.053	0	.033	.039	0
N			2	2	1	2	2	2	1	2	3	1

E V E N T P A R A M E T E R S

3 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
16 NOV65 N ATL RIDGE	31.000	-41.500	17	15 24 42.9	.0997	-.030	11
15 JUL66 N ATLNTC RD	35.400	-36.400	33	02 26 15.0	.0590	.015	5
10 JUN 66 N ATL RUG	32.900	-39.800	0	22 14 37.3	.0737	.014	10

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = CENTRAL MID-ATLANTIC RIDGE
DISTANCE RANGE = 6363 TO 7946 KM AZIMUTH RANGE = 99.7 TO 102.1 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
22 SEP66 N ATL RIDGE	6367.79	100.78	.019	0	.067	.217	.283	.026	-.223	.297	.164	0
25 JUL66 N ATLNTC RD	6926.82	102.05	0	-.177	.053	.176	0	-.006	0	.311	0	-.285
17 DEC 65 MID ATL RG	7946.80	101.43	0	0	0	.163	.217	-.159	-.276	.275	.239	-.353
17 DEC 65 MID ATL RG	7553.26	101.05	0	0	0	.196	.103	-.199	-.121	.226	.269	-.460
17 DEC65 MID ATL RDG	7553.82	101.20	0	0	0	0	.170	-.149	-.309	.336	.096	-.418
03 JUN 66 MID ATL RG	7946.36	99.66	0	-.242	-.090	.075	.047	0	-.139	.191	.283	-.433
AVERAGE			.019	-.210	.010	.165	.164	-.097	-.220	.273	.209	-.390
SIGMA			0	.046	.087	.054	.092	.100	.075	.054	.078	.071
N			1	2	3	5	5	5	5	6	5	5

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
22 SEP66 N ATL RIDGE	6367.79	100.78	.027	.604	.257	-.061	0	.236	.060	-.499	-.610	-.218
25 JUL66 N ATLNTC RD	6926.82	102.05	.043	0	.319	-.204	-.463	.233	0	-.549	0	0
17 DEC 65 MID ATL RG	7946.80	101.43	-.085	.400	.291	-.395	-.473	.251	.213	-.688	-.649	-.155
17 DEC 65 MID ATL RG	7553.26	101.05	-.031	.340	.382	-.380	-.616	.062	.075	-.789	-.661	-.247
17 DEC65 MID ATL RDG	7553.82	101.20	-.018	.397	.244	-.279	-.556	.152	.202	-.658	-.817	-.337
03 JUN 66 MID ATL RG	7946.36	99.66	-.114	.199	.210	-.508	0	.047	0	-.788	-.629	0
AVERAGE			-.030	.388	.284	-.305	-.527	.163	.138	-.662	-.673	-.240
SIGMA			.061	.146	.061	.158	.072	.091	.081	.120	.083	.076
N			6	5	6	6	4	6	4	6	5	4

E V E N T P A R A M E T E R S

6 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. GRADR	ND. STA
22 SEP66 N ATL RIDGE	16.600	-46.700	33	06 09 00.0	.1090	.062	17
25 JUL66 N ATLNTC RD	12.200	-43.900	33	11 42 01.0	.0751	.065	12
17 DEC 65 MID ATL RG	8.500	-39.600	33	10 54 50.5	.0946	.010	17
17 DEC 65 MID ATL RG	8.700	-39.300	33	06 12 32.8	.0735	-.031	17
17 DEC65 MID ATL RDG	8.800	-39.400	33	06 17 24.7	.0664	-.026	16
03 JUN 66 MID ATL RG	7.000	-35.900	33	20 02 51.0	.1117	-.071	15

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66 TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = EQUATORIAL MID-ATLANTIC RIDGE

DISTANCE RANGE = 9043 TO 9338 KM AZIMUTH RANGE = 96.3 TO 100.8 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
14 NOV 65 MID ATL RG	9043.10	97.63	0	0	0	.201	.059	-.110	-.312	.131	0	-.286
14 MAR66 MID ATL RDG	9059.31	97.76	-.054	-.020	.099	.210	.266	-.060	-.200	.242	.043	-.256
01 JAN66 MID ATL RDG	9258.24	96.27	0	0	0	0	.190	-.013	-.175	.204	0	-.365
12 JUN66 S ATL OCEAN	9337.52	100.79	.018	-.106	.013	.175	.144	-.053	-.179	.248	.008	-.290
AVERAGE			-.018	-.067	.056	.195	.165	-.061	-.217	.286	.036	-.299
SIGMA			.051	.055	.061	.010	.087	.043	.065	.054	.039	.046
N			2	2	2	3	4	4	4	4	2	4

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
14 NOV 65 MID ATL RG	9043.10	97.63	0	0	.211	-.239	-.414	0	0	0	0	0
14 MAR66 MID ATL RDG	9059.31	97.76	0	.017	.034	-.245	-.337	-.022	.008	-.539	-.641	-.236
01 JAN66 MID ATL RDG	9258.24	96.27	0	-.000	.132	-.311	-.399	-.053	.022	-.526	-.574	-.315
12 JUN66 S ATL OCEAN	9337.52	100.79	-.167	.127	.234	-.246	-.410	.026	.006	-.594	-.587	-.232
AVERAGE			-.167	.045	.165	-.260	-.390	-.016	.039	-.553	-.601	-.261
SIGMA			0	.072	.070	.034	.036	.040	.043	.034	.035	.047
N			1	3	4	4	4	3	3	3	3	3

E V E N T P A R A M E T E R S

4 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
14 NOV 65 MID ATL RG	1.100	-27.700	27	07 52 49.0	.0638	-.030	9
14 MAR66 MID ATL RDG	.900	-27.700	33	03 21 31.7	.0439	.015	19
01 JAN66 MID ATL RDG	.600	-25.400	33	19 25 50.9	.0407	-.011	14
12 JUN66 S ATL OCEAN	-3.000	-20.200	18	20 20 50.1	.0379	.007	20

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRINGS TRAVEL-TIME TABLES REFERENCE STATION AO

INCLUDING ELLIPTICITY

ANOMALY REGION = CENTRAL MID-ATLANTIC RIDGE AND ASC. IS.
DISTANCE RANGE = 9790 TO 9871 KM AZIMUTH RANGE = 91.3 TO 93.2 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
24 JAN 67 MID ATL RG	9790.20	93.22	-.057	-.101	-.064	.092	.204	.014	-.193	.221	.114	-.207
15 NOV65 MID-ATL RDG	9841.95	92.00	0	0	0	.121	.160	-.030	-.274	.248	.146	-.229
05 MAR 66 N ASCEN IS	9871.47	91.20	.131	-.231	-.047	.166	.176	0	-.331	.169	.117	-.232
AVERAGE			.037	-.164	-.056	.126	.183	-.000	-.266	.210	.124	-.223
SIGMA			.133	.092	.012	.037	.019	.031	.069	.044	.019	.013
N			2	2	2	3	3	2	3	3	3	3

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
24 JAN 67 MID ATL RG	9790.20	93.22	0	0	.175	-.153	-.300	-.041	0	0	-.590	-.308
15 NOV65 MID-ATL RDG	9841.95	92.00	0	0	.172	-.151	-.394	-.126	.157	0	-.643	-.227
05 MAR 66 N ASCEN IS	9871.47	91.29	0	0	.179	-.199	-.405	-.106	.230	-.540	-.668	0
AVERAGE			0	0	.175	-.117	-.366	-.001	.194	-.540	-.620	-.260
SIGMA			0	0	.003	.027	.057	.044	.051	0	.062	.057
N			0	0	3	3	3	3	2	1	3	2

E V E N T P A R A M E T E R S

3 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
24 JAN 67 MID ATL RG	-.800	-19.900	33	15 21 50.4	.0481	.014	16
15 NOV65 MID-ATL RDG	-.300	-10.700	24	11 18 49.9	.0255	-.005	14
05 MAR 66 N ASCEN IS	0	-18.800	33	20 54 45.7	.0430	-.010	16

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66TRAVEL-TIME TABLES — REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = DOMINICAN REP., NONA PASSAGE

DISTANCE RANGE = 4480 TO 4678 KM AZIMUTH RANGE = 117.7 TO 120.3 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
06 MAY 67 DOM REP	4479.59	120.33	.099	-.064	-.054	0	.494	.108	-.118	0	.365	-.204
01 APR 66 DOMIN REP	4525.22	120.28	.114	.034	-.093	.218	.365	-.042	-.142	.214	.444	-.271
10 SEP66 NONA PASSAG	4619.98	117.99	.084	-.068	-.039	.252	.340	.068	0	.317	.337	-.213
04 NOV 66 NONA PASS	4625.86	117.68	.129	.008	-.092	.285	.427	.039	-.115	.297	.377	-.178
14 OCT 66 NONA PASS	4628.44	118.09	.173	-.019	.002	.221	.418	.115	-.138	0	.442	0
31 OCT 66 NONA PASS	4633.51	117.77	.077	-.030	-.081	.214	.365	.018	-.173	.238	.403	-.288
03 NOV 66 NONA PASS	4636.92	118.18	.071	-.029	-.097	.141	.336	.084	-.127	.239	.388	-.214
17 JUN66 NONA PASSAG	4643.10	119.73	.127	-.025	-.053	.269	.360	-.023	-.144	.275	.330	-.221
07 DEC 66 NONA PASS	4665.80	119.60	.078	-.067	-.083	.221	.384	.025	-.198	.258	.361	0
20 NOV 66 NONA PASS	4678.32	119.38	.111	.003	.005	.233	.459	.042	-.131	.307	.390	-.280
	AVERAGE		.106	-.028	-.054	.219	.391	.043	-.144	.208	.390	-.236
	SIGMA		.032	.034	.036	.036	.045	.051	.029	.037	.040	.043
	N		10	10	10	9	10	10	9	8	10	8

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
06 MAY 67 DOM REP	4479.59	120.33	-.008	0	.726	-.093	-.251	.236	.935	-.394	-.412	0
01 APR 66 DOMIN REP	4525.22	120.28	-.037	.792	0	-.157	-.319	.146	.847	-.378	-.433	.545
10 SEP66 NONA PASSAG	4619.98	117.99	-.030	.850	.685	0	-.267	.338	0	-.477	-.459	.614
04 NOV 66 NONA PASS	4625.86	117.68	-.009	.940	.896	-.102	-.381	.223	0	-.492	-.399	0
14 OCT 66 NONA PASS	4628.44	118.09	.044	0	.410	-.173	-.312	.385	.709	-.530	-.424	.719
31 OCT 66 NONA PASS	4633.51	117.77	-.039	.827	.851	-.217	-.405	.268	.742	-.490	-.365	.377
03 NOV 66 NONA PASS	4636.92	118.16	-.003	.749	.824	-.129	-.296	.290	.855	-.549	-.540	.470
17 JUN66 NONA PASSAG	4643.10	119.73	-.054	.799	0	-.119	-.270	.261	0	-.470	-.464	.470
07 DEC 66 NONA PASS	4665.80	119.60	-.045	0	.738	-.194	0	.171	.777	-.501	-.475	.599
20 NOV 66 NONA PASS	4678.32	119.38	-.033	.842	.902	-.164	-.349	.272	.910	-.499	-.475	.634
	AVERAGE		-.021	.830	.745	-.153	-.317	.255	.838	-.478	-.485	.609
	SIGMA		.028	.063	.154	.039	.053	.070	.070	.054	.063	.058
	N		10	7	8	9	9	10	7	10	10	8

E V E N T P A R A M E T E R S

10 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
06 MAY 67 DOM REP	19.300	-70.000	39	14 00 41.4	.0527	.038	16
01 APR 66 DOMIN REP	19.000	-69.700	33	01 37 21.0	.0561	-.011	19
10 SEP66 NONA PASSAG	19.300	-67.900	28	21 58 46.8	.0399	.005	17
04 NOV 66 NONA PASS	19.400	-67.700	33	10 52 57.6	.0529	.011	18
14 OCT 66 NONA PASS	19.200	-67.900	43	01 49 28.0	.1024	.012	17
31 OCT 66 NONA PASS	19.300	-67.700	33	05 11 59.8	.0514	-.026	20
03 NOV 66 NONA PASS	19.100	-67.980	47	11 37 22.7	.0458	-.008	20
17 JUN66 NONA PASSAG	18.400	-68.700	180	01 14 02.0	.0333	.001	18
07 DEC 66 NONA PASS	18.300	-68.500	141	23 54 35.9	.0364	-.027	17
20 NOV 66 NONA PASS	18.300	-68.300	106	07 25 57.5	.0490	.018	28

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RELATIVE TRAVEL-TIME ANOMALIES

HERRIN66TRAVEL-TIME TABLES

INCLUDING ELLIPTICITY

REFERENCE STATION AO

ANOMALY REGION = VIRGIN IS., LEEWARD IS.
DISTANCE RANGE = 4856 TO 5262 KM AZIMUTH RANGE = 112.0 TO 115.0 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D6
13 JAN66 VIRGIN IS.	4856.16	114.80	.040	-.121	-.027	.208	.286	.018	-.135	.282	.274	-.211
16 JUL66 VIRGIN	4938.12	115.54	.135	-.074	.023	.216	.339	.020	-.126	.293	.327	-.110
11 APR 67 LEEWARD IS	5020.89	113.06	-.053	-.135	-.045	.080	.156	-.027	-.145	.145	.175	-.311
16 APR 66 LEEWARD IS	5111.37	112.83	-.043	-.110	-.094	.124	.191	-.073	-.160	.211	.154	-.305
13 NOV 66 LEEWARD IS	5234.99	112.97	.110	-.135	-.038	.207	.298	.042	-.091	.213	.295	0
13 NOV 66 LEEWARD IS	5243.26	113.06	.079	-.024	-.018	.146	.216	-.049	-.229	.192	.252	-.213
24 APR66 LEEWARD IS	5259.77	112.02	.112	-.189	-.035	0	.259	.036	-.196	.313	.284	0
15 JUL66 LEEWARD IS.	5262.40	113.61	.070	-.204	.048	0	.274	-.146	-.242	.286	0	-.271
	AVERAGE		.056	-.124	-.023	.164	.250	-.022	-.166	.242	.252	-.237
	SIGMA		.070	.058	.043	.056	.059	.065	.053	.060	.064	.076
	N		8	8	8	6	8	8	8	8	7	6

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F6	F3	F4
13 JAN66 VIRGIN IS.	4856.16	114.80	.033	.662	.368	-.187	-.177	.373	.286	-.484	0	.376
16 JUL66 VIRGIN	4938.12	115.54	-.026	.733	.658	-.065	-.347	.301	0	-.508	-.599	.433
11 APR 67 LEEWARD IS	5020.89	113.06	.037	.440	.354	-.353	-.289	.505	.833	-.563	-.440	.299
16 APR 66 LEEWARD IS	5111.37	112.83	-.053	.596	.374	-.252	-.412	.366	.235	-.598	-.582	.233
13 NOV 66 LEEWARD IS	5234.99	112.97	.062	.744	.464	-.325	-.365	.426	.312	0	-.595	.270
13 NOV 66 LEEWARD IS	5243.26	113.06	.024	0	.513	-.246	-.339	.447	.251	-.578	-.514	.384
24 APR66 LEEWARD IS	5259.77	112.02	-.003	.769	[illegible]	-.118	-.264	.462	.209	-.656	-.567	.163
15 JUL66 LEEWARD IS.	5262.40	113.61	-.088	.633	.475	-.211	0	.341	.211	0	-.599	.232
	AVERAGE		-.002	.654	.449	-.220	-.313	.403	.220	-.568	-.557	.301
	SIGMA		.051	.113	.104	.097	.077	.068	.090	.063	.059	.068
	N		8	7	6	8	7	8	7	6	7	8

EVENT PARAMETERS

EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
13 JAN66 VIRGIN IS.	19.100	-64.700	41	10 30 51.1	.0544	.028	19
16 JUL66 VIRGIN	18.200	-64.600	130	20 09 51.1	.0938	.057	19
11 APR 67 LEEWARD IS	16.800	-62.700	49	12 42 47.7	.0982	-.046	20
16 APR 66 LEEWARD IS	18.500	-62.000	80	07 12 37.1	.0508	-.046	20
13 NOV 66 LEEWARD IS	17.400	-61.300	65	14 29 54.9	.0582	.018	18
13 NOV 66 LEEWARD IS	17.300	-61.300	52	11 42 25.9	.0462	.010	19
24 APR66 LEEWARD IS	17.700	-60.600	33	23 04 03.0	.0663	.008	18
15 JUL66 LEEWARD IS.	16.900	-61.500	89	08 00 00.7	.0608	-.026	16

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = SOUTHERN W. INDIES - VENEZUELA
DISTANCE RANGE = 5505 TO 5709 KM AZIMUTH RANGE = 115.9 TO 120.4 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	CA	D1	D2
13 FEB 66 WINDWRD IS	5505.00	115.93	.099	-.206	-.116	.202	.324	0	-.294	.160	.178	-.221
09 JAN66 WINDWARD IS	5467.84	118.92	.086	-.220	-.150	.121	.281	-.010	-.264	.082	.243	0
26 APR 67 WINDWRD IS	5694.01	119.16	.053	-.110	-.038	.290	.376	.070	-.250	.233	.365	-.329
14 MAY66 VENEZUELA	5708.90	120.40	0	-.153	-.060	.188	.299	.004	-.241	.201	.329	-.287
08 OCT 66 CST VENEZ.	5709.02	119.77	.069	-.137	-.014	.294	.363	.105	-.201	.253	.466	-.221
AVERAGE			.076	-.165	-.076	.219	.329	.044	-.250	.186	.316	-.265
SIGMA			.021	.047	.056	.073	.041	.056	.034	.068	.111	.053
N			4	5	5	5	5	4	5	5	5	4

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	EA	F1	F2	F3	F4
13 FEB 66 WINDWRD IS	5505.00	115.93	0	.660	.929	0	0	.157	.798	-.075	-.118	.290
09 JAN66 WINDWARD IS	5467.84	118.92	-.166	0	.696	-.208	-.485	.226	.876	-.395	0	.336
26 APR 67 WINDWRD IS	5694.01	119.16	0	.796	.932	-.083	-.419	.262	1.037	-.502	-.515	.466
14 MAY66 VENEZUELA	5708.90	120.40	0	.742	.762	-.066	0	.195	.792	0	-.013	.319
08 OCT 66 CST VENEZ.	5709.02	119.77	-.043	.702	.944	-.172	-.388	.194	.913	-.495	-.443	.373
AVERAGE			-.104	.725	.852	-.132	-.435	.207	.383	-.367	-.272	.357
SIGMA			.087	.058	.116	.068	.040	.039	.100	.200	.244	.068
N			2	4	5	4	3	5	5	4	4	5

E V E N T P A R A M E T E R S

5 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
13 FEB 66 WINDWRD IS	14.100	-61.400	192	06 07 24.1	.1035	.001	16
09 JAN66 WINDWARD IS	11.500	-62.300	156	09 11 30.3	.0700	-.053	17
26 APR 67 WINDWRD IS	11.200	-62.300	121	10 47 49.6	.0919	.021	19
14 MAY66 VENEZUELA	10.500	-63.000	16	20 27 27.4	.0795	.003	16
08 OCT 66 CST VENEZ.	10.800	-62.600	90	19 39 40.5	.0759	.021	20

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66 TRAVEL-TIME TABLES — REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = EASTERN MEXICO = 1

DISTANCE RANGE = 3434 TO 3799 KM AZIMUTH RANGE = 156.6 TO 158.6 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
22 JAN66 CHIAPAS MEX	3433.98	157.01	-.178	.055	0	.108	-.019	.078	-.009	.292	.149	-.090
06 FEB66 MEXICO	3608.12	158.93	-.136	-.009	-.118	.083	-.021	-.004	-.136	.136	-.044	-.160
19 FEB66 OAXACA MEX	3643.78	158.21	-.027	-.132	-.024	-.011	.166	0	-.033	.181	.003	-.122
12 JAN66 OAXACA MEX.	3648.81	158.80	-.133	.016	.030	.059	.110	-.037	.020	.187	.038	-.127
07 MAR66 CHIAPAS MEX	3768.72	158.96	-.135	-.062	-.008	.117	.115	-.019	-.090	.141	0	-.121
09 FEB66 CHIAPAS MEX	3795.96	158.73	-.080	-.003	.030	.069	0	-.076	-.015	.190	.079	0
16 AUG66 CHIAPAS	3799.00	158.56	0	.007	0	.119	0	0	-.006	.138	0	0
AVERAGE			-.115	-.018	-.018	.086	.070	-.012	-.029	.101	.049	-.125
SIGMA			.053	.061	.061	.057	.089	.057	.050	.055	.074	.022
N			6	7	5	7	5	5	7	7	5	5

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
22 JAN66 CHIAPAS MEX	3433.98	157.01	0	.631	.674	0	-.001	.267	0	.150	-.220	.693
06 FEB66 MEXICO	3608.12	158.93	.198	.407	.591	-.138	-.050	.249	.714	-.030	-.138	.503
19 FEB66 OAXACA MEX	3643.78	158.21	.241	0	.665	-.002	0	.129	.818	.037	-.292	.595
12 JAN66 OAXACA MEX.	3648.81	158.60	0	.490	.571	-.083	-.219	.255	.837	.021	0	.611
07 MAR66 CHIAPAS MEX	3768.72	158.96	.296	.561	.571	-.098	-.011	.385	.634	.006	-.110	.649
09 FEB66 CHIAPAS MEX	3795.96	158.73	.137	.468	.520	-.140	-.162	.357	.656	-.041	-.249	.596
16 AUG66 CHIAPAS	3799.00	158.56	0	0	0	0	-.067	.446	0	-.013	-.238	.589
AVERAGE			.218	.515	.599	-.108	-.098	.298	.732	.019	-.208	.617
SIGMA			.067	.085	.060	.029	.077	.106	.092	.064	.070	.040
N			4	5	6	5	6	7	5	7	6	7

E V E N T P A R A M E T E R S

7 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
22 JAN66 CHIAPAS MEX	17.400	-94.100	139	07 36 49.3	.0817	.046	16
06 FEB66 MEXICO	15.900	-93.600	92	04 12 28.9	.0598	-.034	20
19 FEB66 OAXACA MEX	15.400	-94.200	43	02 00 44.0	.0754	-.008	17
12 JAN66 OAXACA MEX.	15.300	-94.400	51	12 29 29.1	.0478	.000	10
07 MAR66 CHIAPAS MEX	14.900	-93.200	22	09 10 54.5	.0536	.015	19
09 FEB66 CHIAPAS MEX	14.300	-93.000	53	00 55 19.8	.0502	-.019	18
16 AUG66 CHIAPAS	14.300	-92.900	40	15 00 46.0	.0608	.014	9

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66 TRAVEL-TIME TABLES — REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = EASTERN MEXICO - 2

DISTANCE RANGE = 3187 TO 3499 KM AZIMUTH RANGE = 162.6 TO 169.2 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
25 SEP66 GUERRERO	3187.03	169.21	-.080	-.023	.088	.051	.007	-.076	-.030	.155	-.034	-.196
21 DEC65 GUERRERO MX	3397.63	164.56	0	0	0	0	.066	-.100	0	.155	.038	-.178
02 APR66 OAXACA MEX	3444.94	163.39	-.043	-.093	.103	.162	-.083	.073	.820	.138	.084	-.094
16 FEB 67 OAXACA	3499.36	162.65	0	-.023	.165	.046	.103	-.014	.001	.183	.060	-.111
AVERAGE			-.066	-.046	.119	.086	.024	-.029	-.003	.156	.048	-.144
SIGMA			.032	.041	.041	.066	.081	.077	.025	.021	.053	.050
N			2	3	3	3	4	4	3	4	4	4

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
25 SEP66 GUERRERO	3187.03	169.21	.190	.498	.605	-.104	-.196	.284	0	-.088	.041	.551
21 DEC65 GUERRERO MX	3397.63	164.56	.156	.482	.522	0	-.239	.268	.713	.038	-.061	.576
02 APR66 OAXACA MEX	3444.94	163.39	.157	.500	.623	-.127	-.069	.283	.847	.027	-.041	.713
16 FEB 67 OAXACA	3490.36	162.65	.190	.465	.563	-.127	-.231	.300	.781	.160	-.016	.679
AVERAGE			.173	.486	.578	-.120	-.184	.284	.781	.034	-.019	.630
SIGMA			.010	.017	.045	.013	.079	.013	.067	.101	.044	.078
N			4	4	4	3	4	4	3	4	4	4

E V E N T P A R A M E T E R S

4 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
25 SEP66 GUERRERO	18.300	-100.800	60	06 02 26.4	.0476	-.019	19
21 DEC65 GUERRERO MX	16.800	-98.100	53	08 41 00.4	.0429	-.027	14
02 APR66 OAXACA MEX	16.500	-97.400	42	01 32 38.3	.0580	.020	20
16 FEB 67 OAXACA	16.100	-96.900	60	19 52 11.6	.0444	.018	19

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RELATIVE TRAVEL-TIME ANOMALIES

HERRIN66TRAVEL-TIME TABLES — REFERENCE STATION A8

INCLUDING ELLIPTICITY

ANOMALY REGION • NORTHERN CENTRAL AMERICA
DISTANCE RANGE • 3869 TO 4362 KM AZIMUTH RANGE • 147.9 TO 154.7 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
17 JAN66 GUATEMALA	3868.58	154.75	0	-.083	.039	-.019	0	0	-.231	.104	.052	0
13 MAR66 HONDURAS	3945.46	140.27	-.107	-.074	-.020	.001	.170	.023	-.289	.176	.107	0
04 APR66 EL SALVADOR	3958.55	151.67	0	-.070	.026	.124	.168	-.112	-.126	.134	0	-.101
07 AUG66 EL SALVADOR	3986.18	151.99	.009	-.101	.009	.133	.191	.042	-.033	.158	.246	0
01 JUL66 EL SALVADOR	4017.64	149.70	0	0	0	0	0	0	0	0	.211	-.020
24 APR66 CST CENT AM	4071.13	150.88	-.052	-.032	.008	.071	.148	-.002	-.129	.221	.133	0
16 DEC65 EL SALVA.-A	4074.86	150.73	0	0	0	0	.099	-.008	0	.218	.089	0
13 JUL66 NICARAGUA	4158.32	149.29	-.006	.006	.081	.111	.094	.040	.039	.200	.158	.028
24 JUL66 CENT AMERCA	4165.35	150.88	0	0	0	0	.132	0	0	.185	.114	0
04 MAY66 NICARAGUA	4172.54	149.20	-.024	.016	.010	0	.166	0	0	.240	.152	0
16 APR66 CST CENT AM	4256.71	150.52	-.055	-.039	-.015	.080	.135	-.005	-.122	.226	.150	.001
12 OCT66 CST NICARAG	4362.09	147.91	-.033	-.040	-.002	.076	.162	-.007	-.137	.178	.136	0
	AVERAGE		-.038	-.046	.015	.072	.147	-.004	-.129	.185	.143	-.033
	SIGMA		.038	.040	.031	.055	.032	.049	.102	.042	.054	.056
	N		7	9	9	8	10	8	8	11	11	4

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
17 JAN66 GUATEMALA	3868.58	154.75	.068	.429	.576	-.056	-.102	.157	.655	-.009	-.338	.495
13 MAR66 HONDURAS	3945.46	140.27	0	.446	.428	.023	-.110	.193	.575	.089	-.403	.270
04 APR66 EL SALVADOR	3958.55	151.67	.024	.528	0	.109	-.156	.170	.739	.097	-.340	.444
07 AUG66 EL SALVADOR	3986.18	151.09	.265	0	.710	.118	-.100	.288	.734	.084	-.336	.597
01 JUL66 EL SALVADOR	4017.64	149.70	.166	.629	.443	.060	-.000	.306	.699	.151	0	.488
24 APR66 CST CENT AM	4071.13	150.88	.187	.543	.521	.002	-.064	.260	.605	.106	-.304	.494
16 DEC65 EL SALVA.-A	4074.86	150.73	.182	.511	.494	-.063	-.127	.248	.643	.108	0	.353
13 JUL66 NICARAGUA	4158.32	149.29	.233	.585	.568	.161	-.047	.359	.743	.191	-.176	.457
24 JUL66 CENT AMERCA	4165.35	150.88	.165	0	.478	0	-.143	.183	0	.046	-.297	.654
04 MAY66 NICARAGUA	4172.54	149.20	0	.538	.626	.173	0	0	.778	.204	0	.503
16 APR66 CST CENT AM	4256.71	150.52	.172	.533	0	0	0	0	0	0	0	0
12 OCT66 CST NICARAG	4362.09	147.91	.184	.555	.569	.004	-.106	.252	.679	.079	-.386	.510
	AVERAGE		.165	.530	.541	.053	-.095	.241	.678	.104	-.315	.460
	SIGMA		.071	.059	.087	.085	.047	.066	.068	.061	.064	.088
	N		10	10	10	10	10	10	10	11	8	11

EVENT PARAMETERS

12 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
17 JAN66 GUATEMALA	14.000	-91.700	126	14 42 22.9	.0776	-.054	16
13 MAR66 HONDURAS	14.400	-88.400	27	21 46 22.0	.0833	-.058	18
04 APR66 EL SALVADOR	13.800	-89.700	188	19 50 07.6	.0616	-.022	17
07 AUG66 EL SALVADOR	13.500	-89.800	71	05 33 40.2	.0772	.047	18
01 JUL66 EL SALVADOR	14.700	-88.400	281	20 17 49.3	.0656	.024	11
24 APR66 CST CENT AM	13.000	-88.900	62	06 03 52.2	.0273	.000	19
16 DEC65 EL SALVA.-A	13.000	-88.800	33	05 22 54.0	.0551	-.031	13
13 JUL66 NICARAGUA	12.600	-87.700	61	08 20 59.4	.0771	.057	20
24 JUL66 CENT AMERCA	12.200	-88.600	33	18 50 55.0	.0401	-.026	10
04 MAY66 NICARAGUA	12.500	-87.600	60	18 13 54.3	.0681	.051	18
16 APR66 CST CENT AM	11.500	-88.100	33	13 21 33.0	.0188	.004	12
12 OCT66 CST NICARAG	11.200	-86.200	43	20 20 06.8	.0218	.002	19

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RELATIVE TRAVEL-TIME ANOMALIES

HERRIN66TRAVEL-TIME TABLES — REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = SOUTHERN CENTRAL AMERICA
DISTANCE RANGE = 4600 TO 5154 KM AZIMUTH RANGE = 144.6 TO 146.3 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
10 JUL66 COSTA RICA	4600.13	145.18	-.069	-.048	-.038	.069	.049	-.037	-.013	.107	.015	-.068
09 APR66 COSTA RICA	4629.32	146.16	-.004	.050	.042	.116	.211	-.034	.020	.237	.146	.065
25 JAN66 PANA-COST R	4751.07	144.62	.000	-.025	.098	.140	.230	.111	.005	0	.166	-.013
09 MAY66 COSTA RICA	4782.75	145.12	-.036	-.065	-.087	.078	.070	-.047	-.190	.138	.117	-.025
5 AUG 66 PANAMA	5033.72	145.88	0	-.067	-.038	.066	.080	0	-.055	.160	.047	-.034
01 APR66 SO PANAMA	5139.89	146.29	-.089	-.082	.027	.120	.088	-.067	-.136	.170	.052	-.142
15 APR66 SO PANAMA	5154.34	146.22	-.064	.018	.026	.120	.181	.047	.012	.186	.125	-.064
AVERAGE			-.043	-.031	.004	.100	.130	-.005	-.045	.166	.096	-.040
SIGMA			.035	.049	.062	.029	.075	.068	.071	.044	.057	.063
N			6	7	7	7	7	6	7	6	7	7

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
10 JUL66 COSTA RICA	4600.13	145.18	.193	.452	.455	-.291	0	.359	.591	.070	0	0
09 APR66 COSTA RICA	4629.32	146.16	.205	.550	.552	-.056	0	.344	.801	.163	-.170	.437
25 JAN66 PANA-COST R	4751.07	144.62	.234	.646	.681	-.022	-.020	.339	.830	.175	-.086	.536
09 MAY66 COSTA RICA	4782.75	145.12	.160	.433	.487	-.202	-.125	.265	.654	-.007	-.143	.351
5 AUG 66 PANAMA	5033.72	145.88	.203	.611	.642	0	0	.486	.494	.187	-.050	0
01 APR66 SO PANAMA	5139.89	146.29	.124	.488	.566	-.135	-.086	.220	.766	0	-.116	.486
15 APR66 SO PANAMA	5154.34	146.22	.182	.591	.593	-.124	-.023	.349	.828	.153	-.057	.463
AVERAGE			.180	.529	.568	-.135	-.063	.337	.709	.123	-.104	.455
SIGMA			.037	.083	.080	.088	.051	.043	.131	.076	.048	.089
N			7	7	7	6	4	7	7	6	6	5

EVENT PARAMETERS

7 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
10 JUL66 COSTA RICA	9.900	-83.700	33	19 16 59.0	.0692	-.051	17
09 APR66 COSTA RICA	9.400	-84.200	40	02 34 23.0	.0589	.036	19
25 JAN66 PANA-COST R	8.800	-82.800	71	16 59 53.0	.0790	.066	19
09 MAY66 COSTA RICA	8.400	-83.000	87	05 30 06.0	.0688	-.053	20
5 AUG 66 PANAMA	6.100	-82.600	33	20 09 07.8	.0833	.001	15
01 APR66 SO PANAMA	5.100	-82.500	39	15 19 51.6	.0594	-.030	19
15 APR66 SO PANAMA	5.000	-82.400	33	06 42 59.7	.0417	.027	20

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERMINGS TRAVEL-TIME TABLES

INCLUDING ELLIPTICITY

REFERENCE STATION AO

ANOMALY REGION • NORTHERN COLUMBIA

DISTANCE RANGE • 5148 TO 5721 KM AZIMUTH RANGE • 132.7 TO 140.2 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
30 MAY66 NO COLOMBIA	5148.23	137.98	0	0	.078	-.172	.292	.099	-.004	.310	.184	-.102
29 MAR66 NO COLUMBIA	5361.99	134.33	.071	.079	0	-.219	.351	.029	-.025	0	.256	-.165
09 JAN 67 W CST COL.	5364.31	140.23	.035	-.052	.062	-.180	0	.043	.032	.030	.275	0
08 NOV 65 N COLUMBIA	5404.59	133.71	0	0	0	0	.374	0	-.134	.690	.428	0
06 NOV 65 N COLUMBIA	5414.15	133.77	0	0	0	-.203	.393	.245	-.003	.300	.446	-.220
10 JAN66 N COLUMBIA	5415.06	132.71	-.076	-.073	.045	0	.334	.029	-.085	.273	.275	0
09 FEB 66 N COLUMBIA	5419.69	133.66	.060	-.003	.005	-.155	.356	.125	-.115	.201	.309	0
09 MAR66 N. COLUMBIA	5419.69	133.66	.080	-.013	.045	-.255	.366	.105	-.045	.331	.359	-.092
21 APR66 NO COLUMBIA	5423.72	133.84	.037	-.133	-.124	.114	.243	-.128	-.143	.162	.133	0
24 JUN66 N. COLUMBIA	5423.72	133.84	.087	-.073	-.004	.184	.262	.043	-.103	.322	.293	-.212
07 AUG 66 N COLUMBIA	5423.72	133.84	.007	-.123	-.034	.194	.282	-.087	-.183	.232	.253	-.272
10 APR66 NO.COLUMBIA	5429.24	133.72	-.001	-.104	-.055	.075	.365	.023	-.065	.252	.256	-.104
30 NOV65 N.COLOMBIA	5429.24	133.72	.069	-.084	.006	.215	.345	.003	-.085	.342	.348	-.235
21 DEC65 N COLUMBIA	5429.24	133.72	0	0	0	.155	.316	-.058	-.155	.233	.206	-.226
20 FEB66 N COLUMBIA	5429.24	133.72	.019	-.114	-.055	.205	.345	0	-.105	.282	.286	-.214
07 JUL66 N. COLOMBIA	5429.24	133.72	-.061	0	0	.175	.265	.043	-.155	.312	.327	-.154
06 JAN66 N COLUMBIA	5433.29	133.90	.036	-.074	-.053	.134	0	-.020	-.053	.234	.279	-.176
11 OCT66 COLUMBIA	5463.83	138.46	-.080	-.019	.038	.127	.270	.006	-.086	.239	.287	0
12 JUN66 N. COLOMBIA	5467.52	133.99	.085	.005	.088	.205	.471	.058	-.093	.395	.396	-.138
03 JAN66 COLUMBIA	5483.47	138.58	0	0	0	0	0	.003	-.086	.281	.222	-.112
16 OCT66 COLUMBIA	5683.59	137.17	-.043	-.028	.029	.212	.284	.039	-.080	.283	.299	0
27 FEB 67 COLOMBIA	5721.10	138.26	.041	.001	.019	.158	.295	.072	-.049	.243	.229	-.125
AVERAGE			.023	-.051	.007	.176	.327	.034	-.083	.283	.285	-.170
SIGMA			.055	.057	.059	.043	.056	.079	.054	.119	.072	.057
N			17	16	16	19	19	20	22	21	22	15

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
30 MAY66 NO COLOMBIA	5148.23	137.98	.317	.657	.028	-.180	.102	.528	.785	.055	0	.804
29 MAR66 NO COLUMBIA	5361.99	134.33	.162	.721	.927	-.213	.315	.540	.727	-.112	0	.864
09 JAN 67 W CST COL.	5364.31	140.23	0	.742	.832	-.112	.365	.629	.750	0	.086	.685
08 NOV 65 N COLUMBIA	5404.59	133.71	.284	.861	1.074	-.203	.216	0	.880	-.076	.010	.985
06 NOV 65 N COLUMBIA	5414.15	133.77	.296	.861	1.111	-.107	.259	.503	.921	-.007	.049	1.017
10 JAN66 N COLUMBIA	5415.06	132.71	.209	.581	.875	-.254	.142	.436	0	-.117	-.052	.725
09 FEB 66 N COLUMBIA	5419.69	133.66	.123	.756	.910	-.229	.189	.414	.696	-.190	-.116	.749
09 MAR66 N. COLUMBIA	5419.69	133.66	0	.825	.959	-.207	.150	.442	.866	-.047	.014	.796
21 APR66 NO COLUMBIA	5423.72	133.84	.048	.674	.851	-.338	-.001	.351	.772	-.188	-.094	.857
24 JUN66 N. COLUMBIA	5423.72	133.84	.148	.753	.960	-.205	.220	.419	0	-.153	0	.683
07 AUG 66 N COLUMBIA	5423.72	133.84	.068	.663	.940	-.215	.070	.339	.762	-.173	.026	.683
10 APR66 NO.COLUMBIA	5429.24	133.72	.065	.707	.879	-.256	.090	.389	.757	-.226	-.108	.554
30 NOV65 N.COLOMBIA	5429.24	133.72	.145	.727	.929	-.257	.160	.420	.687	-.147	.022	.725
21 DEC65 N COLUMBIA	5429.24	133.72	.099	.719	.781	-.290	-.012	.442	.807	-.183	-.059	.450
20 FEB66 N COLUMBIA	5429.24	133.72	.145	0	.873	-.255	.201	.408	.887	-.174	-.028	.702
07 JUL66 N. COLOMBIA	5429.24	133.72	.165	.736	.998	-.244	.261	.478	.847	-.102	-.038	.780
06 JAN66 N COLUMBIA	5433.29	133.90	.051	.686	.871	-.268	.140	.405	.843	-.159	-.036	0
11 OCT66 COLUMBIA	5463.83	138.45	.226	0	.032	0	0	.540	0	0	0	0
12 JUN66 N. COLOMBIA	5467.52	133.99	.154	.808	1.039	-.196	.310	.526	.893	-.126	.044	.853
03 JAN66 COLUMBIA	5483.47	138.58	.160	0	.869	0	.135	.450	.816	0	-.051	0
16 OCT66 COLUMBIA	5683.59	137.17	.220	0	.993	-.146	.181	.513	0	-.210	-.023	.682
27 FEB 67 COLOMBIA	5721.10	138.26	.203	.758	.945	-.170	.200	.489	.849	.231	.036	.643
AVERAGE			.187	.739	.925	-.219	.180	.459	.830	-.111	-.018	.738
SIGMA			.079	.074	.085	.059	.099	.070	.060	.109	.057	.131
N			20	18	22	20	21	21	18	19	18	19

E V E N T P A R A M E T E R S

22 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
30 MAY66 NO COLOMBIA	7.600	-77.000	33	08 09 34.4	.0856	.021	17
29 MAR66 NO COLUMBIA	7.200	-73.700	185	10 06 14.0	.0713	.033	17
09 JAN 67 W CST COL.	5.100	-77.300	40	10 08 23.9	.1115	.018	16
08 NOV 65 N COLUMBIA	7.100	-73.100	142	14 24 10.6	.1617	.105	13
06 NOV 65 N COLUMBIA	7.000	-73.100	136	05 18 23.5	.1336	.105	17
10 JAN66 N COLUMBIA	7.400	-72.400	67	11 13 07.5	.0514	-.024	17
09 FEB 66 N COLUMBIA	7.000	-73.000	152	01 15 23.0	.0509	-.005	19
09 MAR66 N. COLUMBIA	7.000	-73.000	144	10 24 44.0	.0542	.046	19
21 APR66 NO COLUMBIA	6.900	-73.100	152	08 18 23.9	.1072	-.095	19
24 JUN66 N. COLOMBIA	6.900	-73.100	142	20 00 07.0	.0367	-.005	18
07 AUG 66 N COLUMBIA	6.900	-73.100	142	08 20 58.2	.0740	-.054	20
10 APR66 NO.COLUMBIA	6.900	-73.000	155	10 33 35.0	.0790	-.053	20
30 NOV65 N.COLOMBIA	6.900	-73.000	159	09 18 11.6	.0383	.001	20
21 DEC65 N COLUMBIA	6.900	-73.000	172	12 25 43.0	.1012	-.075	17
20 FEB66 N COLUMBIA	6.900	-73.000	152	04 10 27.5	.0399	-.019	18
07 JUL66 N. COLOMBIA	6.900	-73.000	147	00 10 30.5	.0452	.005	18
06 JAN66 N COLUMBIA	6.800	-73.100	168	04 15 59.3	.0486	-.034	18
11 OCT66 COLUMBIA	4.900	-76.000	181	08 57 45.0	.0599	-.014	12
12 JUN66 N. COLOMBIA	6.500	-73.000	142	03 56 20.0	.0770	-.061	20
03 JAN66 COLUMBIA	4.700	-76.000	103	18 18 05.9	.0384	-.019	11
16 OCT66 COLUMBIA.	3.600	-74.200	47	18 43 34.9	.0497	.004	17
27 FEB 67 COLOMBIA	2.900	-74.800	69	02 08 42.5	.0882	.026	20

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66 TRAVEL-TIME TABLES INCLUDING ELLIPTICITY REFERENCE STATION A2

ANOMALY REGION = PERU - ECUADOR

DISTANCE RANGE = 6025 TO 6497 KM AZIMUTH RANGE = 143.2 TO 146.7 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
24 AUG66 ECUADOR	6024.56	143.60	.032	-.025	.023	.226	.271	.035	.003	.315	.185	-.161
26 MAR62 PERU-ECU	6129.07	146.66	-.019	-.027	.062	.140	0	.026	-.056	0	.059	-.021
12 JAN66 PERU-ECUAD	6132.45	143.93	.026	-.069	.141	.184	.221	-.126	0	.239	.140	0
29 DEC65 PERU-EC.	6209.77	144.30	0	0	0	0	.276	.013	.034	.253	.172	-.213
20 AUG62 PERU-EC BDR	6214.24	144.19	.007	-.041	.037	.203	.201	-.069	-.050	.296	.175	-.193
13 FEB 67 N PERU	6497.43	143.21	.040	-.021	0	.209	.282	.036	-.043	.335	.237	-.136
AVERAGE			.026	-.036	.082	.154	.250	-.014	-.023	.296	.165	-.157
SIGMA			.031	.020	.044	.030	.033	.065	.040	.036	.048	.051
N			2	5	4	5	5	6	5	5	6	5

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
24 AUG26 ECUADOR	6024.56	143.20	.254	.723	.652	-.176	.126	.566	.205	.207	.046	.616
26 MAR66 PERU-ECU	6129.07	143.66	.222	.631	0	-.126	.012	.440	.610	.034	-.011	.565
12 JAN66 PERU-ECUAD	6132.45	143.93	.126	.731	.661	-.154	-.142	.456	.655	.116	0	.543
29 DEC65 PERU-EC.	6209.77	144.30	.236	.572	.741	-.253	.021	.525	.765	.254	-.034	.455
20 AUG62 PERU-EC BDR	6214.24	144.15	.124	.673	.619	-.117	.040	.463	.734	.046	-.025	.514
13 FEB 67 N PERU	6497.43	143.21	.276	.763	.673	-.237	.003	0	.896	.146	-.046	.534
AVERAGE			.233	.622	.636	-.196	.010	.502	.207	.100	-.014	.545
SIGMA			.036	.071	.061	.048	.087	.054	.050	.068	.037	.044
N			2	6	5	6	2	5	6	6	5	6

E V E N T P A R A M E T E R S

EPICENTER	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
24 AUG66 ECUADOR	1.500	-77.600	154	20 10 06.0	.0515	.036	20
26 MAR66 PERU-ECU	3.520	-20.900	69	15 22 12.4	.0446	-.011	17
12 JAN66 PERU-ECUAD	2.300	-77.000	162	06 02 09.6	.0563	-.012	17
29 DEC65 PERU-EC.	3.200	-77.300	24	04 02 24.1	.0514	-.021	16
20 AUG66 PERU-EC BDR	3.200	-77.200	116	07 43 27.6	.0392	-.015	20
13 FEB 27 N PERU	9.200	-75.400	89	10 25 43.9	.0402	.021	16

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RELATIVE TRAVEL-TIME ANOMALIES

HERRIN66 TRAVEL-TIME TABLES INCLUDING ELLIPTICITY

REFERENCE STATION A0

ANOMALY REGION = PERU - BRAZIL

DISTANCE RANGE = 6736 TO 7174 KM AZIMUTH RANGE = 140.5 TO 145.0 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
23 MAR66 PERU-BRAZIL	6736.09	143.58	-.116	0	0	.160	0	-.115	-.104	.176	.212	0
07 NOV66 N PERU	6737.40	144.95	-.103	0	.049	.145	.E58	-.113	-.150	.325	.148	0
21 MAY66 PERU-BRAZIL	6834.78	143.54	0	-.077	.068	.205	.266	-.021	-.069	.33E	.233	-.186
09 SEP66 PERU-BRAZIL	6853.95	143.38	.037	-.0E8	.137	.206	.E20	-.100	-.101	.322	.138	-.218
31 MAY66 PERU-BRAZIL	6869.50	143.58	0	-.039	.128	.266	.297	-.013	-.090	.294	.171	-.170
13 JAN66 PERU-BRAZIL	6883.19	143.E7	.068	.050	.046	.269	.254	0	0	0	.251	-.275
13 OCT66 PERU BRAZIL	6909.76	143.76	-.108	-.180	.100	.157	.296	-.108	-.130	.317	.085	-.206
27 MAR 67 BRAZIL	7060.27	140.79	.018	-.0E9	.061	.220	.397	.028	-.081	.3-8	.E5E	-.192
15 FEB 67 PERU-BRAZL	7070.19	140.84	-.013	-.100	-.018	.150	.266	-.023	-.111	.278	.E51	-.343
05 JUN 66 PERU-BRAZL	7173.52	140.50	0	-.204	-.050	0	0	-.166	-.139	.183	.170	0
AVERAGE			-.031	-.091	.058	.1E7	.E82	-.070	-.117	.279	.171	-.227
SIGMA			.077	.079	.06E	.048	.053	.064	.037	.078	.068	.061
N			7	E	E	9	8	9	9	9	10	7

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
23 MAR66 PERU-BRAZIL	6736.09	143.58	.076	.598	.823	-.153	-.109	.563	.932	-.034	-.041	.376
07 NOV66 N PERU	6737.40	144.95	.232	0	.855	-.218	-.059	.550	.745	-.132	-.035	.505
21 MAY66 PERU-BRAZIL	6834.78	143.54	.234	.715	.875	-.182	.045	.513	.797	-.034	-.088	.451
09 SEP66 PERU-BRAZIL	6853.95	143.38	.250	.629	.855	-.220	-.056	.550	.816	-.023	-.E77	.420
31 MAY66 PERU-BRAZIL	6869.50	143.58	.249	.750	.909	-.262	-.050	.581	.805	.081	.013	.507
13 JAN66 PERU-BRAZIL	6883.19	143.27	.327	.758	.989	-.239	.168	.646	.913	.130	0	.596
13 OCT66 PERU BRAZIL	6909.76	143.76	.230	.705	.788	-.212	-.011	.536	.688	-.110	0	.4E7
27 MAR 67 BRAZIL	7060.27	140.79	0	.704	.894	-.049	.148	.6E4	.643	.0E4	-.085	.452
15 FEB 67 PERU-BRAZL	7070.19	140.84	.035	.504	.762	-.202	.020	.457	.668	-.028	-.171	.066
05 JUN 66 PERU-BRAZL	7173.52	140.50	.146	.614	.787	0	.081	.478	0	-.0E2	-.176	0
AVERAGE			.197	.664	.854	-.193	.009	.550	.779	-.014	-.075	.430
SIGMA			.093	.0E3	.068	.062	.090	.059	.103	.0EE	.068	.151
N			9	9	10	E	10	10	9	10	8	9

EVENT PARAMETERS

10 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
23 MAR66 PERU-BRAZIL	-7.300	-74.800	137	21 57 09.6	.0781	-.029	16
07 NOV66 N PERU	-7.800	-75.900	147	20 31 33.0	.0520	-.018	17
21 MAY66 PERU-BRAZIL	-8.100	-74.400	160	07 44 20.0	.0350	.0E1	1E
09 SEP66 PERU-BRAZIL	-8.200	-74.200	156	04 04 03.7	.0394	.002	20
31 MAY66 PERU-BRAZIL	-8.400	-74.300	184	08 50 18.9	.0602	.039	19
13 JAN66 PERU-BRAZIL	-8.400	-74.000	1E0	14 17 10.8	.1120	.08E	16
13 OCT66 PERU BRAZIL	-8.E00	-74.300	155	15 45 15.6	.0569	-.021	1E
27 MAR 67 BRAZIL	-8.900	-71.300	6E3	08 26 34.5	.0821	.052	1E
15 FEB 67 PERU-BRAZL	-9.000	-71.300	5E7	16 11 11.8	.1177	-.070	20
05 JUN 66 PERU-BRAZL	-9.700	-70.600	6E8	19 03 10.0	.0857	-.070	13

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRINGS TRAVEL-TIME TABLES INCLUDING ELLIPTICITY

REFERENCE STATION A0

ANOMALY REGION = COAST OF PERU
DISTANCE RANGE = 6876 TO 6902 KM AZIMUTH RANGE = 148.9 TO 149.0 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
18 OCT66 CST PERU	6875.85	149.00	0	-.010	-.010	.080	.252	0	0	.346	.008	-.157
17 OCT66 CST PERU	6900.58	148.03	-.115	-.060	.052	.134	.320	0	-.010	.350	.120	-.107
19 NOV66 CST PERU	6901.63	149.53	-.102	0	0	.162	0	0	0	0	0	0
AVERAGE			-.109	-.035	.021	.125	.290	0	-.019	.348	.104	-.132
SIGMA			.009	.035	.044	.042	.054	0	0	.003	.022	.035
N			2	2	2	3	2	0	1	2	0	2

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
18 OCT66 CST PERU	6875.85	149.00	.243	.668	.705	-.225	-.046	.543	0	-.128	.067	0
17 OCT66 CST PERU	6900.58	148.93	.296	0	.810	-.253	-.012	.556	.789	0	.001	.602
19 NOV66 CST PERU	6901.63	149.53	0	0	0	0	0	0	.711	-.080	.093	.938
AVERAGE			.270	.665	.802	-.239	-.020	.540	.750	-.104	.038	.569
SIGMA			.038	0	.010	.020	.024	.009	.055	.034	.034	.047
N			2	1	2	2	2	2	2	2	3	2

E V E N T P A R A M E T E R S

3 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
18 OCT66 CST PERU	-10.600	-79.500	30	08 26 07.7	.0257	-.011	15
17 OCT66 CST PERU	-10.500	-78.600	39	23 04 22.1	.0235	.010	17
19 NOV66 CST PERU	-10.700	-79.100	34	18 20 30.0	.0304	-.002	6

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66 TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = PERU - BOLIVIA

DISTANCE RANGE = 7372 TO 7934 KM AZIMUTH RANGE = 142.1 TO 148.1 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
17 OCT66 PERU	7371.94	148.15	0	-.169	.093	-.177	.240	-.083	-.090	.349	.139	0
10 JUN66 CST. PERU	7446.34	148.06	-.031	-.071	.058	.212	.233	-.138	-.105	.274	.151	-.310
19 JUN66 CST. PERU	7460.63	148.00	-.110	-.132	.068	.222	.225	-.129	-.096	.304	.103	0
07 JUN66 PERU	7474.92	147.95	-.050	-.152	-.012	.224	.377	-.069	-.068	.245	.225	0
07 JUN66 PERU	7481.10	148.08	0	-.143	.039	.213	.185	-.081	-.066	.336	.060	0
09 FEB66 PERU CST	7519.91	147.45	-.023	.056	.164	.208	.297	-.046	-.194	.375	.200	-.131
19 DEC65 PERU	7546.67	145.74	0	0	0	0	.198	0	-.122	.288	.172	-.114
02 JUN66 S. PERU	7709.68	144.06	0	.017	.060	.171	.282	-.080	-.117	.327	.211	-.120
10 FEB66 PERU	7726.73	148.83	.065	-.092	.080	.199	.338	-.110	-.110	.342	.159	0
04 JAN66 S PERU	7726.81	143.46	-.035	-.135	.056	.206	.245	-.127	-.155	.237	.189	-.299
09 FEB66 PERU	7769.13	148.89	.006	0	.034	.225	.275	-.122	-.081	.330	.207	-.315
4 SEP 66 CST PERU	7834.50	147.38	-.081	-.138	.015	.173	.277	-.174	-.072	.294	.203	-.328
30 DEC65 S PERU	7853.62	144.36	0	0	0	0	.487	0	-.003	.350	.262	-.165
02 DEC65 PERU-BOL	7886.41	142.71	0	0	0	0	.366	-.031	-.072	.345	.209	-.277
02 MAY66 PERU-BOLIV	7929.04	142.12	.030	-.124	.058	.301	0	-.086	-.178	.283	.186	0
15 MAR66 PERU - BOL	7934.27	142.26	.029	0	.049	.322	.395	-.059	-.078	.345	.291	-.214
AVERAGE			-.020	-.098	.059	.219	.295	-.095	-.096	.314	.185	-.227
SIGMA			.054	.072	.042	.045	.083	.040	.040	.040	.056	.088
N			10	11	13	13	15	14	16	16	16	10

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
17 OCT66 PERU	7371.94	148.15	.249	.691	.815	-.232	-.011	.929	.742	-.055	-.024	.432
10 JUN66 CST. PERU	7446.34	148.06	.146	.626	.767	-.388	-.122	.961	.722	-.285	-.087	.322
19 JUN66 CST. PERU	7460.63	148.00	.215	.719	.752	-.290	-.058	.942	.770	-.234	-.036	.381
07 JUN66 PERU	7474.92	147.95	.093	.613	.799	-.233	.034	.614	.709	-.204	.105	.383
07 JUN66 PERU	7481.10	148.08	.186	.763	.735	-.320	-.091	.591	.665	0	-.072	.445
09 FEB66 PERU CST	7519.91	147.45	.140	.714	.729	-.274	.092	.494	.679	-.112	.058	.298
19 DEC65 PERU	7546.67	145.74	.237	.691	.765	-.192	.021	.507	.656	.001	-.039	.413
02 JUN66 S. PERU	7709.68	144.06	.164	.674	.842	-.236	.046	.514	.645	-.091	-.102	.325
10 FEB66 PERU	7726.73	148.83	.182	.791	.785	-.322	.008	.500	.650	0	-.024	.319
04 JAN66 S PERU	7726.81	143.46	.179	.599	.729	-.221	.025	.436	.624	-.099	-.050	.213
09 FEB66 PERU	7769.13	148.89	.199	0	.704	-.228	.017	.576	.626	-.124	-.015	.282
4 SEP 66 CST PERU	7834.50	147.38	.174	.670	.681	-.392	-.132	.487	.501	-.323	-.082	.131
30 DEC65 S PERU	7853.62	144.36	.171	.72[illegible]	.745	-.240	.086	.542	.611	-.157	.054	.220
02 DEC65 PERU-BOL	7886.41	142.71	.241	.687	0	-.302	.097	.452	.519	-.019	0	.224
02 MAY66 PERU-BOLIV	7929.04	142.12	.087	.684	.674	-.294	.129	.455	0	.009	-.025	.156
15 MAR66 PERU - BOL	7934.27	142.26	.170	.730	.734	-.228	.058	.536	.669	-.027	-.045	.219
AVERAGE			.177	.691	.750	-.274	.012	.524	.654	-.123	-.026	.298
SIGMA			.047	.053	.047	.059	.078	.055	.075	.106	.058	.097
N			16	15	15	16	16	16	15	14	15	16

E V E N T P A R A M E T E R S

16 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
17 OCT66 PERU	-13.500	-74.600	186	11 11 55.3	.0596	.019	18
10 JUN66 CST. PERU	-14.800	-76.000	22	08 13 25.8	.0685	-.034	20
19 JUN66 CST. PERU	-14.900	-75.900	29	15 40 47.6	.0591	-.012	19
07 JUN66 PERU	-15.000	-75.800	48	00 59 46.6	.0682	.010	19
07 JUN66 PERU	-15.100	-75.900	42	03 24 17.2	.0701	-.008	17
09 FEB66 PERU CST	-15.200	-75.200	54	15 13 30.1	.0619	.027	20
19 DEC65 PERU	-14.800	-73.600	94	20 10 23.5	.0676	.022	15
02 JUN66 S. PERU	-15.500	-71.500	121	17 05 38.0	.0517	.015	19
10 FEB66 PERU	-16.700	-73.900	13	10 43 30.3	.0412	.015	18
04 JAN66 S PERU	-15.400	-70.900	189	12 48 13.2	.0506	-.030	20
09 FEB66 PERU	-16.700	-72.900	33	03 55 00.9	.0341	-.002	18
4 SEP 66 CST PERU	-17.800	-74.000	8	05 37 49.7	.0926	-.067	20
30 DEC65 S PERU	-16.800	-71.200	118	06 16 03.9	.0753	.035	15
02 DEC65 PERU-BOL	-16.400	-69.600	196	00 36 30.1	.0709	.008	14
02 MAY66 PERU-BOLIV	-16.900	-68.900	138	21 34 01.0	.0740	-.009	17
15 MAR66 PERU - BOL	-16.600	-69.000	172	03 46 27.0	.0570	.031	19

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = NORTHERN CHILE - BOLIVIA BORDER AREA
DISTANCE RANGE = 8083 TO 8489 KM AZIMUTH RANGE = 141.2 TO 145.9 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
14 JUN66 CST N CHILE	8083.27	144.15	-.023	-.152	.024	.141	.175	-.139	-.249	.286	.036	-.437
02 JAN66 N CHILE	8135.77	143.84	0	0	0	0	.311	-.028	-.124	.366	.225	-.312
30 DEC65 N. CHILE	8160.26	143.84	0	0	0	.305	.393	-.010	-.145	.248	.204	-.237
02 MAR66 BOLIVIA	8187.40	141.21	.019	-.210	-.005	.220	.337	-.139	-.223	.290	.247	-.382
11 MAR66 N CHILE 1	8213.76	143.75	.051	-.107	.123	.368	.317	-.112	-.189	.421	.247	-.225
27 DEC65 N CHILE	8214.72	143.97	0	0	0	0	.394	.035	-.087	.402	.230	-.326
04 JUN66 NO CHILE	8264.67	144.19	0	-.259	-.054	0	0	-.170	-.247	.236	.124	0
08 MAR66 CHILE - BOL	8277.22	143.71	.141	-.160	.003	.281	.351	-.096	-.212	.365	.137	-.315
23 MAY66 CHILE-BOLIV	8331.59	143.85	0	0	.084	.333	.322	.049	-.004	.349	.253	-.342
13 JAN66 N CHILE	8339.11	144.42	-.076	-.192	-.062	.102	.234	-.087	-.190	.252	.077	0
17 APR66 CHILE-BOLIV	8383.31	143.32	0	0	0	0	0	0	0	0	0	0
12 JUL66 CHILE-BOLIV	8406.91	144.29	-.035	-.155	-.082	.165	.179	-.120	-.194	.186	.091	-.353
19 FEB66 CHILE BOLIV	8446.06	144.46	.003	-.237	-.080	.107	.319	0	0	.260	.156	0
04 JAN66 N CHILE	8450.14	145.85	.048	-.137	.109	.261	.299	-.068	-.122	.276	.198	-.329
03 FEB66 CHILE-BOLIV	8469.22	144.03	0	0	0	0	0	0	0	0	0	0
	AVERAGE		.016	-.179	.006	.228	.303	-.074	-.166	.290	.171	-.326
	SIGMA		.066	.049	.078	.096	.072	.071	.077	.069	.073	.062
	N		8	9	10	10	12	12	12	13	13	10

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
14 JUN66 CST N CHILE	8083.27	144.15	.014	.680	.529	-.348	.119	.454	.311	-.026	.186	.120
02 JAN66 N CHILE	8135.77	143.84	.187	.718	.718	-.317	.187	.541	.476	-.099	.181	.290
30 DEC65 N. CHILE	8160.26	143.84	.167	.654	0	-.297	.109	.428	.360	-.089	.107	.198
02 MAR66 BOLIVIA	8187.40	141.21	.076	.660	.507	-.333	.127	.433	.549	-.122	.139	.100
11 MAR66 N CHILE 1	8213.76	143.75	0	.713	.639	-.301	.082	.476	.504	-.132	.101	.037
27 DEC65 N CHILE	8214.72	143.97	.169	.732	.691	-.270	.230	.544	.502	0	.162	.267
04 JUN66 NO CHILE	8264.67	144.19	.054	0	.531	-.391	.059	.400	.304	-.146	.027	.089
08 MAR66 CHILE - BOL	8277.22	143.71	0	.524	.584	-.359	.095	.369	0	-.212	-.021	0
23 MAY66 CHILE-BOLIV	8331.59	143.85	.186	.662	.599	-.299	.107	0	.496	-.098	.065	.152
13 JAN66 N CHILE	8339.11	144.42	0	.520	.489	-.333	.128	.475	.461	-.101	0	.074
17 APR66 CHILE-BOLIV	8383.31	143.32	0	0	.554	-.318	.081	.463	.518	-.159	.054	.049
12 JUL66 CHILE-BOLIV	8406.91	144.29	.036	.502	.377	-.458	.017	.345	.240	-.189	.035	-.040
19 FEB66 CHILE BOLIV	8446.06	144.46	.049	0	.470	-.309	.112	.461	.368	-.117	.175	-.033
04 JAN66 N CHILE	8450.14	145.85	.061	.567	.515	-.455	.090	.374	.442	-.158	.053	.031
03 FEB66 CHILE-BOLIV	8469.22	144.03	0	0	.511	-.231	.089	.522	.312	-.103	.102	.033
	AVERAGE		.100	.630	.564	-.340	.107	.449	.417	-.124	.092	.097
	SIGMA		.069	.086	.091	.063	.045	.062	.098	.047	.060	.079
	N		10	11	14	15	15	14	14	14	14	14

E V E N T P A R A M E T E R S

15 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
14 JUN66 CST N CHILE	-18.600	-70.100	140	08 54 58.4	.0742	-.027	20
02 JAN66 N CHILE	-18.900	-69.600	191	03 53 48.0	.0878	.070	16
30 DEC65 N. CHILE	-19.100	-69.500	185	16 42 44.5	.0579	.033	16
02 MAR66 BOLIVIA	-18.200	-67.000	274	05 56 28.0	.0467	.005	20
11 MAR66 N CHILE 1	-19.500	-69.200	115	01 48 34.8	.0743	.044	19
27 DEC65 N CHILE	-19.600	-69.400	187	11 55 11.2	.0997	.090	15
04 JUN66 NO CHILE	-20.100	-69.400	99	18 07 00.8	.0673	-.059	15
08 MAR66 CHILE - BOL	-20.000	-68.900	122	20 46 12.0	.0633	-.014	17
23 MAY66 CHILE-BOLIV	-20.500	-68.800	133	18 00 16.4	.0753	.055	17
13 JAN66 N CHILE	-20.800	-69.300	110	19 26 24.0	.0650	-.037	17
17 APR66 CHILE-BOLIV	-20.700	-68.100	61	00 38 37.0	.0463	-.004	8
12 JUL66 CHILE-BOLIV	-21.300	-68.900	99	08 01 37.0	.1022	-.086	20
19 FEB66 CHILE BOLIV	-21.700	-68.900	112	02 48 14.8	.0673	-.036	16
04 JAN66 N CHILE	-22.300	-70.200	52	06 29 27.0	.0524	-.011	20
03 FEB66 CHILE-BOLIV	-21.700	-68.400	116	00 47 19.2	.0717	-.003	9

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RELATIVE TRAVEL-TIME ANOMALIES

HERRIN66TRAVEL-TIME TABLES

INCLUDING ELLIPTICITY

REFERENCE STATION A0

ANOMALY REGION = NORTHERN CHILE - ARGENTINA BORDER AREA
DISTANCE RANGE = 8535 TO 8975 KM AZIMUTH RANGE = 142.1 TO 147.6 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
16 DEC65 N CHILE	8534.54	144.43	0	0	0	0	0	0	0	0	0	-.329
11 MAR66 N CHILE 2	8633.81	145.60	-.019	-.156	.009	.221	.234	-.008	-.216	.228	.705	-.350
01 MAR66 N CHILE	8642.08	144.49	.053	-.207	.102	.207	.331	-.069	-.166	.364	.154	-.354
26 OCT65 NO CHILE	8661.54	146.74	0	0	0	0	.300	.008	.002	.296	.274	-.265
19 JUL66 ARGENTINA	8690.76	143.34	-.035	-.170	.035	.205	.252	-.133	-.220	.233	.143	-.386
07 FEB66 CHILE-ARG	8765.59	145.65	.001	-.153	.031	.169	.243	-.129	-.144	.218	.213	0
08 FEB66 CHILE-ARG	8767.33	144.21	.006	-.184	-.078	.156	.274	-.157	-.187	.173	.140	-.309
04 JAN66 CHILE-ARG	8787.30	145.23	-.055	-.233	-.122	.151	0	0	-.228	0	.134	0
28 FEB66 N CHILE	8814.64	147.58	.121	-.215	.004	.155	.200	-.062	0	.202	.153	-.244
26 OCT65 ARGENT-A	8833.81	142.33	0	0	0	0	0	0	0	.257	.308	0
31 JAN66 SALTA ARGEN	8959.66	142.10	.087	.010	-.001	.270	.290	-.155	-.262	.231	.184	0
14 APR66 SALTA ARG.	8974.57	142.27	.020	-.141	.060	.109	.278	.052	-.151	.213	.259	-.291
AVERAGE			.020	-.161	.004	.191	.276	-.001	-.175	.235	.197	-.316
SIGMA			.058	.071	.068	.039	.054	.073	.077	.040	.060	.848
N			9	9	9	9	9	9	9	10	11	8

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
16 DEC65 N CHILE	8534.54	144.43	.048	0	.467	-.374	-.049	.507	.364	-.076	0	.036
11 MAR66 N CHILE 2	8633.81	145.60	0	.535	.429	-.388	.118	.380	.461	-.160	.068	.040
01 MAR66 N CHILE	8642.08	144.49	.049	.457	.435	-.357	.128	.330	.249	-.005	.085	-.158
26 OCT65 NO CHILE	8661.54	146.74	.078	0	.334	-.460	.092	.234	.337	-.075	.094	-.035
19 JUL66 ARGENTINA	8690.76	143.34	-.027	.479	.414	-.352	.144	.342	.325	-.112	.053	-.006
07 FEB66 CHILE-ARG	8765.59	145.65	-.007	.423	.361	-.359	.018	.326	.455	-.077	.048	-.039
08 FEB66 CHILE-ARG	8767.33	144.21	.042	.398	.279	-.499	-.014	.208	.232	-.216	-.062	-.164
04 JAN66 CHILE-ARG	8787.30	145.23	0	.429	.420	-.300	.007	.287	0	-.101	.058	.023
28 FEB66 N CHILE	8814.64	147.58	-.006	.352	.475	0	.054	.430	.284	-.183	-.014	-.134
26 OCT65 ARGENT-A	8833.81	142.33	0	.560	.558	0	.041	.311	0	-.153	0	.027
31 JAN66 SALTA ARGEN	8959.66	142.10	-.004	.426	.393	-.301	.062	.223	.260	-.095	-.033	-.034
14 APR66 SALTA ARG.	8974.57	142.27	.000	.456	0	-.300	-.014	.281	.355	-.150	.091	-.020
AVERAGE			.019	.452	.415	-.305	.056	.321	.332	-.124	.037	-.039
SIGMA			.035	.062	.075	.056	.061	.007	.080	.047	.054	.074
N			9	10	11	10	12	12	10	12	10	12

EVENT PARAMETERS

12 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
16 DEC65 N CHILE	-22.400	-68.500	160	22 46 30.0	.0851	.035	9
11 MAR66 N CHILE 2	-23.700	-69.200	67	09 30 42.0	.0510	.016	19
01 MAR66 N CHILE	-23.300	-68.100	120	12 21 51.4	.0534	.009	20
26 OCT65 NO CHILE	-24.400	-70.200	55	12 15 08.3	.0813	.035	15
19 JUL66 ARGENTINA	-23.200	-66.800	103	07 25 27.6	.0404	-.005	20
07 FEB66 CHILE-ARG	-24.000	-68.700	94	14 59 48.0	.0412	.000	19
08 FEB66 CHILE-ARG	-24.200	-67.300	173	14 54 30.5	.0790	-.062	20
04 JAN66 CHILE-ARG	-24.000	-68.200	90	14 51 54.0	.0575	-.024	14
28 FEB66 N CHILE	-26.000	-70.400	87	21 30 52.4	.0651	-.015	18
26 OCT65 ARGENT-A	-23.900	-65.200	150	19 31 37.0	.0849	.050	8
31 JAN66 SALTA ARGEN	-24.800	-64.400	43	14 01 25.4	.0678	-.002	19
14 APR66 SALTA ARG.	-25.000	-64.500	25	06 19 13.6	.0461	.013	19

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

JEFFREY-BULLEN TRAVEL-TIME TABLES

INCLUDING ELLIPTICITY

REFERENCE STATION AO

ANOMALY [illegible] CENTRAL CHILE - ARGENTINA BORDER AREA

DISTANCE RANGE = 9112 TO 9954 KM AZIMUTH RANGE = 148.4 TO 154.6 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	A1	A2	A3	B4	C1	C2	C3	C4	D1	D2
23 OCT65 CHILE CST	9111.77	149.95	.138	0	-.048	.374	0	-.035	-.053	.265	.215	-.177
12 JUN66 ARGENTINA	9199.04	147.21	-.014	-.134	-.015	0	.211	-.155	-.189	.168	.224	-.251
13 NOV65 ARGENTINA	9251.57	147.14	0	0	0	0	.285	0	-.162	.310	.155	-.267
06 JUN66 CHILE-ARGEN	9323.28	148.40	-.047	-.183	-.085	.152	.125	-.159	-.259	.156	.081	-.410
11 DEC65 ARGENTINA	9327.68	147.40	0	0	0	.256	.329	-.035	-.112	.241	.284	-.279
10 SEP66 EST C CHILE	9331.21	151.18	-.042	-.103	-.040	.164	.203	-.083	-.260	.176	.218	-.242
10 APR 66 C CHILE	9348.68	150.47	.035	-.104	-.004	.120	.183	-.058	-.057	.117	0	0
14 OCT65 C CHILE	9403.51	151.18	0	0	0	0	0	0	0	0	.096	-.207
08 MAR66 S J ARGENT	9421.75	148.35	-.044	-.187	-.006	.169	.245	-.113	-.200	.201	.105	-.247
02 DEC65 ARGENTINA	9425.77	148.27	0	0	0	.178	.255	-.141	-.157	.130	.206	-.284
23 OCT65 C CHILE	9428.53	150.90	0	-.139	0	.252	.255	-.068	0	0	.197	-.293
10 NOV66 SAN JUAN AR	9490.05	148.45	-.014	-.151	-.025	0	.208	-.096	-.171	.187	.196	-.279
12 MAR66 S J ARGENT	9512.93	147.31	.026	-.151	.038	.256	.313	-.066	-.150	.252	.352	-.321
29 APR66 CHILE-ARGEN	9745.69	151.40	-.052	-.202	-.035	.155	.177	-.112	-.184	.177	.225	-.300
13 APR66 EST C CHILE	9955.74	154.57	-.008	-.111	-.008	.155	.194	-.108	-.174	.201	.171	-.280
AVERAGE			.003	-.152	-.023	.204	.232	-.095	-.170	.199	.201	-.276
SIGMA			.052	.032	.033	.073	.050	.042	.055	.055	.071	.054
N			10	10	10	11	13	13	13	13	14	14

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
23 OCT65 C CHILE CST	9111.77	149.95	.058	0	.260	-.356	.087	.314	.341	-.007	-.306	-.128
12 JUN66 ARGENTINA	9199.04	147.21	-.010	.392	.366	-.354	.134	.301	.255	-.085	.148	.034
13 NOV65 ARGENTINA	9251.57	147.14	-.102	0	0	-.354	.001	.308	0	-.101	-.015	-.083
06 JUN66 CHILE-ARGEN	9323.28	148.40	-.135	.348	.251	-.395	-.068	.261	.164	-.211	-.003	-.219
11 DEC65 ARGENTINA	9327.68	148.40	-.018	.490	.391	-.425	.013	0	.385	-.125	.071	.048
10 SEP66 EST C CHILE	9331.21	151.18	.007	0	0	-.373	.050	.299	0	-.152	-.015	-.053
10 APR 66 C CHILE	9348.68	150.47	-.078	0	.346	-.285	.050	.292	.328	-.027	.053	-.020
14 OCT65 C CHILE	9403.51	151.18	-.095	0	.190	-.332	-.149	.208	.180	-.154	-.007	-.211
08 MAR66 S J ARGENT	9421.75	148.35	0	.428	.264	-.471	.042	.345	.302	-.093	.066	-.010
02 DEC65 ARGENTINA	9425.77	148.27	-.083	.395	.172	-.412	-.014	.259	0	-.180	-.017	.010
23 OCT65 C CHILE	9428.53	150.90	.065	0	.178	-.364	-.200	.227	0	-.160	.083	[illegible]
10 NOV66 SAN JUAN AR	9490.05	148.45	-.041	.411	.318	-.408	-.046	.244	.395	-.153	.028	-.059
12 MAR66 S J ARGENT	9512.93	147.31	0	.470	.257	-.477	-.015	.344	.342	0	.027	-.007
29 APR66 CHILE-ARGEN	9745.69	151.40	-.035	.439	.155	-.404	-.105	.204	.225	-.123	.001	-.252
13 APR66 EST C CHILE	9955.74	154.57	-.044	.416	.255	-.411	0	.281	.315	-.179	.023	[illegible]
AVERAGE			-.039	.421	.262	-.388	-.015	.280	.299	-.120	.024	-.077
SIGMA			.061	.043	.075	.051	.092	.047	.075	.066	.060	.100
N			13	9	13	15	14	14	11	14	15	14

E V E N T P A R A M E T E R S

15 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
23 OCT65 C CHILE CST	-29.400	-71.600	33	06 53 32.8	.0901	.049	17
12 JUN66 ARGENTINA	-29.000	-68.400	95	19 26 21.6	.0691	.029	19
13 NOV65 ARGENTINA	-29.400	-68.100	45	17 49 41.7	.0457	.010	12
06 JUN66 CHILE-ARGEN	-30.600	-69.300	109	09 56 33.4	.0832	-.070	20
11 DEC65 ARGENTINA	-29.700	-67.000	20	13 40 13.0	.0716	.053	16
10 SEP66 CST C CHILE	-31.700	-72.000	20	14 12 46.2	.0414	-.002	17
10 APR 66 C CHILE	-31.500	-71.200	64	16 36 14.5	.0635	.025	17
14 OCT65 C CHILE	-32.300	-71.700	30	03 28 08.3	.0957	-.060	11
08 MAR66 S J ARGENT	-31.100	-68.600	102	02 32 52.7	.0395	.003	19
02 DEC65 ARGENTINA	-31.300	-68.500	45	10 16 27.0	.0491	-.019	16
23 OCT65 C CHILE	-32.400	-71.300	67	15 34 47.2	.0735	-.006	13
10 NOV66 SAN JUAN AR	-31.900	-68.400	133	03 02 32.5	.0321	-.002	19
12 MAR66 S J ARGENT	-31.600	-67.100	128	00 58 37.5	.0571	.037	18
29 APR66 CHILE-ARGEN	-35.300	-70.700	93	03 32 20.2	.0631	-.041	20
13 APR66 EST C CHILE	-38.200	-73.200	40	03 35 18.3	.0253	-.009	19

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRINGS TRAVEL-TIME TABLES

INCLUDING ELLIPTICITY

REFERENCE STATION A0

ANOMALY REGION = GULF OF CALIF

DISTANCE RANGE = 2244 TO 2462 KM AZIMUTH RANGE = 186.5 TO 191.9 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
02 SEP66 GULF CALIF	2243.83	191.93	0	-.063	.028	0	0	-.111	.047	.089	0	-.220
30 NOV 65 G OF CAL	2317.60	189.08	-.044	-.123	-.020	-.014	.032	-.159	-.156	-.060	.041	-.331
14 DEC 65 G OF CAL	2327.40	188.80	0	0	0	0	0	0	-.181	0	-.041	-.308
01 MAR 67 G OF CAL	2393.39	188.61	-.100	-.030	.056	.001	.022	.005	-.034	.067	-.079	-.163
25 DEC 65 G OF CAL	2407.33	188.59	0	0	0	.091	.016	0	-.108	.081	-.024	-.198
18 MAY 66 G OF CAL	2419.25	188.81	0	-.049	.002	.041	.031	.023	-.046	.054	.015	-.142
18 MAY 66 G OF CAL	2462.47	188.48	0	.046	.043	.142	.029	.071	-.115	.043	.096	-.009
AVERAGE			-.072	-.044	.022	.068	.026	-.034	-.085	.046	.001	-.207
SIGMA			.039	.061	.031	.058	.007	.097	.078	.055	.063	.087
N			2	5	5	5	5	5	7	6	6	7

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
02 SEP66 GULF CALIF	2243.83	191.93	.171	.272	.237	-.226	.149	.25[illegible]	.190	.185	0	.238
30 NOV 65 G OF CAL	2317.60	189.08	.045	.097	.611	.022	-.087	.144	.395	-.001	-.206	.279
14 DEC 65 G OF CAL	2327.40	188.80	-.040	.128	.252	-.058	-.079	.119	.504	.057	-.206	.384
01 MAR 67 G OF CAL	2393.39	188.61	.103	.307	.313	.022	-.238	.225	.512	.047	-.280	.577
25 DEC 65 G OF CAL	2407.33	188.59	-.004	.202	.464	.006	-.223	.101	0	.174	-.139	.367
18 MAY 66 G OF CAL	2419.25	188.81	.045	.304	.455	-.104	-.103	.180	.431	.031	-.113	.480
18 MAY 66 G OF CAL	2462.47	188.48	.020	.414	.553	.017	-.151	.145	0	-.043	-.270	.560
AVERAGE			.037	.246	.412	-.045	-.106	.167	.406	.066	-.214	.414
SIGMA			.085	.111	.147	.093	.128	.057	.131	.088	.075	.133
N			7	7	7	7	7	7	5	7	6	7

E V E N T P A R A M E T E R S

7 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
02 SEP66 GULF CALIF	26.800	-110.800	34	21 20 17.0	.1401	-.003	15
30 NOV 65 G OF CAL	26.000	-109.800	49	12 34 55.0	.0921	-.037	20
14 DEC 65 G OF CAL	25.900	-109.700	49	17 27 01.7	.0820	-.043	13
01 MAR 67 G OF CAL	25.300	-109.700	33	01 20 04.3	.0720	-.017	20
25 DEC 65 G OF CAL	25.100	-108.900	49	12 34 19.0	.0670	-.007	15
18 MAY 66 G OF CAL	25.000	-109.000	33	07 32 07.3	.0455	.018	19
18 MAY 66 G OF CAL	24.600	-108.900	33	08 04 59.2	.0900	.041	18

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN68TRAVEL-TIME TABLES

INCLUDING ELLIPTICITY

REFERENCE STATION A0

ANOMALY REGION = S CHILE

DISTANCE RANGE = 10110 TO 10741 KM AZIMUTH RANGE = 156.2 TO 158.1 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
13 MAR 67 S CHILE	10110.43	156.21	-.032	-.124	-.048	.113	.205	-.164	-.198	.242	.095	-.224
25 APR 66 S CHILE	10305.86	157.77	-.019	-.182	-.029	.081	.242	-.190	-.245	.283	.114	0
17 MAY66 CST S CHILE	10494.11	158.10	-.013	-.169	-.017	.197	.175	-.129	0	.212	.145	-.300
28 NOV 65 S CHILE	10741.50	158.83	-.010	-.207	-.084	.164	.190	-.183	-.282	.207	.074	-.208
AVERAGE			-.019	-.170	-.045	.139	.203	-.167	-.215	.236	.108	-.244
SIGMA			.010	.035	.029	.052	.029	.028	.026	.035	.029	.049
N			4	4	4	4	4	4	3	4	4	3

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
13 MAR 67 S CHILE	10110.43	156.21	.045	.397	.184	-.458	0	.359	-.001	-.190	.232	0
25 APR 66 S CHILE	10305.86	157.77	.017	.451	.117	-.633	-.161	.389	.100	-.284	.072	-.188
17 MAY66 CST S CHILE	10494.11	158.10	-.053	.452	0	0	0	.318	0	-.063	.074	0
28 NOV 65 S CHILE	10741.50	158.83	.133	.451	.150	-.282	.168	.274	-.108	-.065	.389	-.143
AVERAGE			.035	.438	.151	-.458	.004	.335	-.003	-.150	.192	-.165
SIGMA			.077	.027	.033	.175	.233	.050	.104	.107	.151	.032
N			4	4	3	3	2	4	3	4	4	2

E V E N T P A R A M E T E R S

4 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
13 MAR 67 S CHILE	-40.100	-74.500	33	6 06 54.3	.0249	.004	18
25 APR 66 S CHILE	-42.300	-75.600	33	4 32 30.0	.0797	-.027	19
17 MAY66 CST S CHILE	-44.000	-75.200	33	16 58 17.0	.0562	-.004	14
28 NOV 65 S CHILE	-45.000	-72.400	33	3 56 45.9	.0845	.025	20

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RELATIVE TRAVEL-TIME ANOMALIES

HERRIN68TRAVEL-TIME TABLES

INCLUDING ELLIPTICITY

REFERENCE STATION 40

ANOMALY REGION = MISC. WESTERN MEXICO
DISTANCE RANGE = 2814 TO 4048 KM AZIMUTH RANGE = 176.4 TO 186.4 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
23 MAY 66 REVILLAGIG	2813.98	185.41	-.162	-.075	.075	.016	.034	-.105	.015	.140	-.101	-.151
26 JAN 67 REVILLAGIG	2815.48	185.84	-.160	-.047	.111	.085	-.014	-.085	.050	.117	-.211	-.227
22 MAY66 REVILLA GIG	2836.68	185.38	-.139	-.026	.104	.087	.025	-.034	.032	.171	-.136	-.066
22 MAY 66 REVILLAGIG	2847.09	185.36	-.149	-.106	.074	-.012	.040	-.054	.031	.081	.016	-.117
23 JAN 67 REVILLAGIG	2984.18	186.43	0	-.113	.135	.015	0	-.169	-.078	.115	.010	.214
08 AUG66 REV GIG IS	3042.16	183.86	-.164	.024	.092	.179	.043	-.041	.035	.143	-.079	0
11 JUN 66 REVILLAGIG	3053.23	183.85	-.164	-.136	-.009	-.041	-.096	-.211	-.187	.044	-.098	-.226
06 DEC65 J4LISCO MEX	3082.02	181.79	0	0	0	-.094	.034	-.024	.048	.160	0	-.227
30 APR 66 J4LISCO	3092.95	180.97	.007	.012	.122	.103	.013	-.095	.085	.177	-.075	-.169
06 DEC 65 J4LISCO	3093.46	181.58	0	0	0	0	-.044	0	0	0	-.147	-.163
30 AUG66 J4LISCO	3104.51	181.57	0	0	.108	0	0	-.019	.006	.157	-.166	-.214
11 MAR 66 MICHOACAN	3483.31	176.80	-.107	-.079	.026	-.006	-.805	-.155	-.033	.096	-.068	-.239
03 SEP 66 OFF C MEX	4047.80	176.44	0	.006	-.803	.077	.099	-.158	-.005	.129	-.081	-.251
	AVERAGE		-.140	-.054	.076	.054	.012	-.098	.007	.127	-.096	-.189
	SIGMA		.061	.057	.050	.045	.051	.067	.055	.039	.063	.056
	N		8	10	11	11	11	12	12	12	12	12

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	F3	E4	F1	F2	F3	F4
23 MAY 66 REVILLAGIG	2813.98	185.41	.071	.407	.458	-.415	-.117	.224	.131	-.291	-.095	.226
26 JAN 67 REVILLAGIG	2815.48	185.84	.098	.379	.468	-.444	-.105	.277	.017	-.238	.044	.343
22 MAY66 REVILLA GIG	2836.68	185.38	.186	.483	.470	-.364	-.135	.193	.113	-.241	-.023	.320
22 MAY 66 REVILLAGIG	2847.09	185.36	.164	.464	.474	-.293	-.171	.192	.042	-.268	.016	.475
23 JAN 67 REVILLAGIG	2984.18	186.43	.095	.376	.438	-.501	-.339	.111	.030	-.489	-.191	.348
08 AUG66 REV GIG IS	3042.16	183.86	.193	.540	.496	-.289	-.222	.259	.235	-.412	-.110	.376
11 JUN 66 REVILLAGIG	3053.23	183.85	-.019	.382	.360	-.400	-.230	.129	.092	-.503	-.203	.251
06 DEC65 J4LISCO MEX	3082.02	181.79	.164	.475	.384	-.425	-.235	.215	0	0	-.203	.413
30 APR 66 J4LISCO	3092.95	180.97	.211	.513	.450	-.260	-.219	.325	0	-.351	-.098	.525
06 DEC 65 J4LISCO	3093.46	181.58	.148	.473	.459	-.386	-.170	.260	.154	-.349	-.077	0
30 AUG66 J4LISCO	3104.51	181.57	.226	.535	.393	-.407	-.115	.300	0	-.446	-.134	.454
11 MAR 66 MICHOACAN	3483.31	176.80	0	.407	.286	-.333	-.131	.264	.156	-.337	-.099	.362
03 SEP 66 OFF C MEX	4047.80	176.44	.047	0	0	-.338	-.134	.287	.326	-.256	-.204	.327
	AVERAGE		.130	.453	.428	-.374	-.179	.227	.138	-.348	-.106	.368
	SIGMA		.078	.061	.061	.069	.068	.063	.097	.095	.083	.088
	N		12	12	12	13	13	13	10	12	13	12

EVENT PARAMETERS

13 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
23 MAY 66 REVILLAGIG	21.400	-108.700	58	11 51 30.0	.0461	-.008	20
26 JAN 67 REVILLAGIG	21.400	-108.900	33	06 04 33.9	.0693	.001	20
22 MAY66 REVILLA GIG	21.200	-108.700	53	07 42 50.0	.0545	.029	20
22 MAY 66 REVILLAGIG	21.100	-108.700	48	09 29 23.0	.0650	.024	20
23 JAN 67 REVILLAGIG	19.900	-109.300	56	20 25 38.3	.0878	-.056	18
08 AUG66 REV GIG IS	19.300	-108.100	33	08 02 45.8	.0614	.035	10
11 JUN 66 REVILLAGIG	19.200	-108.100	45	02 37 39.0	.0946	-.082	20
06 DEC65 J4LISCO MEX	18.900	-107.180	37	11 34 53.7	.0502	.001	14
30 APR 66 J4LISCO	18.800	-106.700	54	13 01 19.0	.0741	.051	19
06 DEC 65 J4LISCO	18.800	-107.000	40	18 42 33.2	.0335	.008	12
30 AUG66 J4LISCO	18.700	-107.000	54	23 37 19.0	.0650	.017	15
11 MAR 66 MICHOACAN	19.300	-104.500	33	09 49 27.0	.0541	-.020	19
03 SEP 66 OFF C MEX	18.200	-104.200	47	16 24 20.7	.0757	.005	17

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RELATIVE TRAVEL-TIME ANOMALIES

HERRIN(P)TRAVEL-TIME TABLES

INCLUDING ELLIPTICITY

REFERENCE STATION AO

ANOMALY REGION = GALAPAGOS REGION

DISTANCE RANGE = 4946 TO 5200 KM AZIMUTH RANGE = 158.3 TO 175.8 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
10 AUG66 E CENT PACF	4946.15	175.83	0	-.160	.036	0	-.002	0	0	.167	-.126	0
28 JAN66 GALAPAGOS I	4985.33	164.43	-.106	0	.045	.001	.074	0	-.084	.149	-.067	-.120
05 DEC 66 GALAPAGOS	4986.55	167.74	-.003	-.064	.068	.039	.018	-.100	-.023	.060	.005	-.113
14 NOV 65 GALAPAGOS	5200.02	158.34	0	0	0	0	.174	0	0	.200	.095	-.174
AVERAGE			-.100	-.112	.050	.040	.066	-.100	-.044	.149	-.023	-.138
SIGMA			.009	.060	.016	.030	.079	0	.029	.051	.098	.032
N			2	2	3	2	4	1	2	4	4	3

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
10 AUG66 E CENT PACF	4946.15	175.83	.137	.462	0	-.386	-.219	.207	0	-.526	-.116	0
28 JAN66 GALAPAGOS I	4985.33	164.43	.158	.536	.634	-.360	-.174	.309	.611	-.463	-.166	.344
05 DEC 66 GALAPAGOS	4986.55	167.74	.103	.428	.528	-.226	-.139	.463	.417	-.090	.013	.500
14 NOV 65 GALAPAGOS	5200.02	158.34	.298	.408	.551	-.032	-.164	.517	.683	0	.010	.442
AVERAGE			.174	.450	.569	-.258	-.174	.394	.630	-.360	-.065	.429
SIGMA			.006	.056	.056	.169	.034	.113	.028	.236	.091	.079
N			4	4	3	4	4	4	3	3	4	3

EVENT PARAMETERS

4 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
10 AUG66 E CENT PACF	2.100	-103.300	33	17 47 42.0	.0851	-.062	12
28 JAN66 GALAPAGOS I	2.700	-95.300	33	07 59 58.0	.0625	-.024	18
05 DEC 66 GALAPAGOS	2.300	-97.600	33	02 36 53.5	.0765	.020	20
14 NOV 65 GALAPAGOS	1.700	-00.600	33	03 11 23.0	.1005	.040	13

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RELATIVE TRAVEL-TIME ANOMALIES

HERRIN68TRAVEL-TIME TABLES

REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = EAST CENT PACIFIC AND NORTH EASTER CORDILLERA
DISTANCE RANGE = 5404 TO 5667 KM AZIMUTH RANGE = 177.4 TO 179.6 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
21 JUL66 ESTR-GALOP	5403.87	177.51	-.050	-.093	.110	.134	.127	-.171	-.025	.174	-.098	-.137
20 JUN 66 N EASTER I	5415.25	177.39	-.138	-.073	.028	.050	-.001	-.249	.014	.142	-.153	-.197
06 JUL 66 N EASTER I	5457.40	178.30	-.087	-.089	0	.102	.105	-.177	.024	.236	.013	0
02 SEP66 N EASTER CD	5467.03	179.59	-.072	-.086	.046	.054	.084	-.111	-.024	.194	-.005	-.064
AVERAGE			-.087	-.086	.061	.088	.079	-.177	-.003	.186	-.061	-.133
SIGMA			.037	.009	.043	.040	.056	.056	.025	.039	.078	.067
N			4	4	3	4	4	4	4	4	4	3

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
21 JUL66 ESTR-GALOP	5403.87	177.51	.143	.619	.736	0	-.190	.393	0	-.648	-.201	.226
20 JUN 66 N EASTER I	5415.25	177.39	.069	.559	.612	-.506	-.246	.316	.536	-.776	-.227	.104
06 JUL 66 N EASTER I	5457.40	178.30	.078	.448	.618	-.422	-.169	.445	.428	-.687	-.179	.108
02 SEP66 N EASTER CD	5467.03	179.59	.137	.597	.651	-.433	-.187	.246	.544	-.654	-.198	-.029
AVERAGE			.107	.556	.654	-.454	-.190	.350	.570	-.692	-.201	.102
SIGMA			.039	.076	.057	.046	.033	.047	.051	.058	.020	.104
N			4	4	4	3	4	4	3	4	4	4

EVENT PARAMETERS

4 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
21 JUL66 ESTR-GALOP	-3.900	-104.300	33	05 32 18.2	.0495	.028	18
20 JUN 66 N EASTER I	-4.000	-104.200	33	09 38 16.0	.0510	.039	20
06 JUL 66 N EASTER I	-4.400	-104.900	33	19 23 34.0	.0474	.014	18
02 SEP66 N EASTER CD	-4.500	-105.900	33	07 59 05.7	.0499	.001	20

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN(68)TRAVEL-TIME TABLES

INCLUDING ELLIPTICITY

REFERENCE STATION A0

ANOMALY REGION = NORTHWEST OF EASTER I.
DISTANCE RANGE = 7650 TO 7809 KM AZIMUTH RANGE = 187.4 TO 188.8 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
06 NOV65 EASTER I	7650.45	187.54	0	0	0	0	.102	-.132	-.145	-.034	.123	-.171
09 NOV65 EASTER I	7671.48	187.42	0	0	0	0	0	0	0	-.105	.128	0
05 NOV65 EASTER I	7673.48	187.62	0	0	0	0	0	0	-.146	-.023	0	-.245
08 NOV 66 EASTER IS	7808.70	188.76	-.010	-.103	-.030	-.172	.305	-.111	-.187	.104	.197	-.122
AVERAGE			-.010	-.103	-.030	-.172	.244	-.121	-.133	-.015	.136	-.179
SIGMA			0	0	0	0	.007	.015	.022	.087	.010	.062
N			1	1	1	1	2	2	3	4	3	3

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
06 NOV65 EASTER I	7650.45	187.54	-.324	.162	.496	-.325	-.164	.097	.449	-.079	-.154	0
09 NOV65 EASTER I	7671.48	187.42	-.298	.223	.503	-.268	-.142	.121	0	-.101	-.092	.021
05 NOV65 EASTER I	7673.48	187.62	0	0	.413	0	-.062	.141	.546	-.105	-.252	-.055
08 NOV 66 EASTER IS	7808.70	188.76	-.172	.546	.516	-.325	-.124	.282	0	-.178	-.123	.033
AVERAGE			-.265	.311	.502	-.306	-.123	.160	.497	-.114	-.155	-.000
SIGMA			.002	.208	.070	.033	.044	.083	.069	.043	.069	.048
N			3	3	4	3	4	4	2	4	4	3

E V E N T P A R A M E T E R S

4 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
06 NOV65 EASTER I	-22.100	-113.000	33	09 21 40.6	.0536	-.030	15
09 NOV65 EASTER I	-22.300	-113.700	33	21 59 04.3	.0564	-.005	11
05 NOV65 EASTER I	-22.300	-113.900	33	10 03 27.0	.0591	-.023	10
08 NOV 66 EASTER IS	-23.400	-115.200	33	03 19 17.0	.0777	.039	19

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RELATIVE TRAVEL-TIME ANOMALIES

HERRIN68TRAVEL-TIME TABLES INCLUDING ELLIPTICITY REFERENCE STATION A0

ANOMALY REGION = SOUTH AND WEST OF EASTER I.
DISTANCE RANGE = 8108 TO 9075 KM AZIMUTH RANGE = 179.8 TO 187.7 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
08 APR66 EASTER	8108.10	187.68	0	-.118	-.016	0	.225	-.074	0	.069	.181	-.099
09 APR66 EASTER	8243.67	186.81	.040	0	-.085	.171	.284	-.041	-.135	.142	.186	-.207
06 SEP 66 EASTER IS	8442.79	185.47	-.020	-.078	.022	.238	.350	-.001	-.100	.182	.257	-.138
24 NOV65 EASTER I.	8529.88	187.55	.028	-.051	.013	.317	.360	-.052	-.046	.116	.184	-.222
29 NOV65 EASTER I	8768.63	182.39	.032	-.127	-.025	0	0	-.110	-.120	.089	.161	-.301
24 MAR66 EASTER	8824.04	182.37	.025	-.059	-.066	0	.209	-.100	-.135	.220	0	0
16 MAY 67 EASTER IS	8844.51	181.86	-.070	-.177	-.110	.153	.294	-.123	-.068	.106	.111	-.153
05 APR66 EASTER	9026.00	182.90	.030	-.098	.063	.295	.328	0	-.131	.221	.100	0
09 FEB 66 E IS CORD	9074.76	179.82	.037	-.088	.093	.263	.350	-.048	-.069	.213	.089	-.234
AVERAGE			.013	-.100	-.017	.239	.300	-.068	-.101	.151	.159	-.194
SIGMA			.038	.041	.061	.066	.058	.041	.035	.068	.056	.068
N			8	8	9	6	8	8	8	9	8	7

EVENT NAME	DISTANCE	AZIMUTH	D3	DA	E1	E2	E3	E4	F1	F2	F3	F4
08 APR66 EASTER	8108.10	187.68	-.216	.364	.570	-.258	-.158	.219	.535	0	-.006	-.017
09 APR66 EASTER	8243.67	186.81	-.155	.403	.548	-.297	-.249	.118	.617	-.233	-.408	.030
06 SEP 66 EASTER IS	8442.79	185.47	-.177	0	.678	-.308	0	.306	0	-.192	-.446	-.009
24 NOV65 EASTER I.	8529.88	187.55	-.193	.388	.695	-.380	-.319	.157	.759	-.378	-.603	0
29 NOV65 EASTER I	8768.63	182.39	-.182	.364	.514	-.376	-.258	0	.426	0	-.605	0
24 MAR66 EASTER	8824.04	182.37	-.278	.464	.474	-.341	-.160	.063	0	-.348	-.725	-.039
16 MAY 67 EASTER IS	8844.51	181.86	-.079	.472	.325	-.263	-.191	.300	0	-.182	-.805	-.174
05 APR66 EASTER	9026.00	182.90	-.141	0	.427	-.440	-.194	.214	0	-.381	-.482	-.085
09 FEB 66 E IS CORD	9074.76	179.82	-.065	.471	.472	-.426	-.261	.251	.264	-.374	-.564	-.081
AVERAGE			-.165	.418	.523	-.343	-.219	.203	.520	-.298	-.582	-.065
SIGMA			.066	.049	.117	.067	.062	.086	.188	.092	.128	.065
N			9	7	9	9	8	8	5	7	6	7

EVENT PARAMETERS

9 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
08 APR66 EASTER	-26.200	-114.400	33	14 07 53.9	.0545	.006	16
09 APR66 EASTER	-27.500	-113.600	33	04 07 52.0	.0657	.013	19
06 SEP 66 EASTER IS	-29.400	-112.300	33	20 25 06.0	.0750	.049	17
24 NOV65 EASTER I.	-30.000	-114.700	33	03 12 43.0	.0844	.018	19
29 NOV65 EASTER I	-32.500	-109.000	33	18 50 31.0	.0492	-.034	15
24 MAR66 EASTER	-33.000	-109.000	33	07 24 52.0	.0747	-.028	16
16 MAY 67 EASTER IS	-33.200	-108.400	33	08 14 34.0	.1010	-.024	19
05 APR66 EASTER	-34.000	-109.700	33	18 34 53.0	.0617	.002	16
09 FEB 66 E IS CORD	-35.300	-106.000	33	13 57 48.7	.0791	-.006	20

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66TRAVEL-TIME TABLES

INCLUDING ELLIPTICITY REFERENCE STATION AO

ANOMALY REGION = W CHILE MISF = 1

DISTANCE RANGE = 8969 TO 9490 KM AZIMUTH RANGE = 170.1 TO 177.5 DEGREES

EVENT NAME		DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
22 JUN 66	W CHILE R	8968.93	177.46	.043	-.095	-.049	.245	.154	0	-.036	.217	.008	-.219
03 MAR 67	W CHILE R	9034.07	174.32	.013	-.117	.020	.176	.143	-.065	-.159	.280	.174	0
10 NOV 66	S PACIFIC	9202.27	175.51	.010	-.118	.055	.197	.203	0	-.070	.258	.075	0
22 FEB 67	W CHILE R	9273.04	172.79	-.024	-.093	.017	.160	.101	-.232	-.004	.257	.061	-.289
25 FEB 66	S PACIFIC	9349.39	171.25	.003	-.182	.016	.135	.262	0	-.116	.268	.007	-.245
10 JUL 66	W CHILE R	9490.09	170.14	-.063	-.036	.087	.223	.225	-.216	-.071	.285	[illegible]	0
		AVERAGE		-.003	-.107	.024	.189	.208	-.171	-.076	.261	.087	-.251
		SIGMA		.030	.048	.046	.041	.058	.092	.055	.024	[illegible]	.035
		N		6	6	6	6	6	3	6	6	6	3

EVENT NAME		DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
22 JUN 66	W CHILE R	8968.93	177.46	-.085	.409	.314	-.474	-.162	.211	-.033	-.337	-.449	-.249
03 MAR 67	W CHILE R	9034.07	174.32	.032	.494	.417	0	-.100	.178	0	-.308	0	-.260
18 NOV 66	S PACIFIC	9202.27	175.51	-.000	.417	.371	0	-.172	.304	.094	0	-.518	-.123
22 FEB 67	W CHILE R	9273.04	172.79	-.004	.443	.377	-.578	-.215	.248	0	-.606	-.590	-.166
25 FEB 66	S PACIFIC	9349.39	171.25	.042	.400	.231	-.526	-.100	.295	-.019	-.495	-.426	-.138
18 JUL 66	W CHILE R	9490.09	170.14	.121	.522	0	-.571	-.054	.456	0	-.424	-.193	-.083
		AVERAGE		.018	.447	.342	-.537	-.147	.289	.014	-.434	-.435	-.170
		SIGMA		.068	.050	.072	.048	.059	.097	.070	.121	.150	.071
		N		6	6	5	4	6	6	3	5	5	6

E V E N T P A R A M E T E R S

6 EPICENTERS		LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
22 JUN 66	W CHILE R	-34.300	-103.200	33	5 51 53.0	.0575	-.012	19
03 MAR 67	W CHILE R	-34.700	-99.400	33	3 01 36.6	.0713	.005	16
18 NOV 66	S PACIFIC	-36.300	-100.700	33	9 12 09.9	.0412	.008	16
22 FEB 67	W CHILE R	-36.700	-97.300	33	3 51 15.0	.0646	-.029	19
25 FEB 66	S PACIFIC	-37.200	-95.300	33	2 45 11.0	.0503	[illegible]17	19
18 JUL 66	W CHILE R	-38.300	-93.700	33	2 15 38.0	.0932	.053	17

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

DERRINGER TRAVEL-TIME TABLES

INCLUDING ELLIPTICITY

REFERENCE STATION A0

ANOMALY REGION = WEST CHILE RISE - 2

DISTANCE RANGE = 9925 TO 10057 KM AZIMUTH RANGE = 163.4 TO 166.6 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
06 APR 67 W CHILE R	9924.77	166.56	-.152	-.180	-.007	0	.132	-.205	-.108	.232	.008	-.232
06 DEC 66 W CHILE R	10057.27	163.38	-.063	-.107	-.036	-.128	.276	-.123	-.087	.353	-.049	-.281
AVERAGE			-.108	-.144	-.022	-.128	.204	-.164	-.097	.292	-.031	-.257
SIGMA			.063	.052	.021	0	.101	.058	.015	.085	.055	.035
N			2	2	2	1	2	2	2	2	2	2

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
06 APR 67 W CHILE R	9924.77	166.56	.088	.373	.292	0	0	.447	0	0	0	-.243
06 DEC 66 W CHILE R	10057.27	163.38	.099	.265	.138	-.453	.094	.382	-.120	-.175	.150	-.403
AVERAGE			.093	.319	.215	-.453	.094	.415	-.120	-.175	.150	-.323
SIGMA			.005	.076	.108	0	0	.046	0	0	0	.113
N			2	2	2	1	1	2	1	1	1	2

E V E N T P A R A M E T E R S

2 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	ND. STA
06 APR 67 W CHILE R	-41.500	-88.200	33	1 52 03.0	.0500	.004	14
06 DEC 66 W CHILE R	-41.900	-83.700	33	05 25 07.2	.0413	-.003	20

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RELATIVE TRAVEL-TIME ANOMALIES

HERRIN66TRAVEL-TIME TABLES

INCLUDING ELLIPTICITY

REFERENCE STATION 40

ANOMALY REGION = SAMOA - TONGA IS. REGION
DISTANCE RANGE = 9565 TO 10446 KM AZIMUTH RANGE = 238.8 TO 244.2 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
12 MAR66 SAMOA	9565.29	243.40	-.001	-.183	-.050	.090	.029	-.301	-.189	.125	-.076	-.207
01 JAN 67 TONGA IS	9590.86	243.21	-.149	-.312	-.122	.029	-.051	-.318	-.208	-.017	-.083	0
12 MAR66 TONGA	9584.13	242.51	.009	-.228	-.601	.105	.042	-.363	-.152	.118	0	-.249
20 NOV65 TONGA IS	9661.03	243.82	0	0	0	0	0	0	-.135	.075	-.112	.423
05 JUL66 TONGA	9671.59	244.24	.052	-.226	-.068	.108	.069	-.294	-.162	.074	6	-.409
02 JAN66 TONGA IS.	9684.62	243.14	0	0	0	.121	0	0	-.242	.108	-.026	-.428
26 DEC65 TONGA IS.	9759.62	243.33	0	0	0	.143	.057	-.272	-.148	.064	-.087	-.379
20 MAR66 TONGA-1	9796.93	242.80	-.107	-.338	-.120	.090	-.010	-.410	-.243	.151	-.092	.359
11 AUG 66 TONGA IS	9952.22	240.90	.006	-.197	-.025	.139	.110	-.201	-.242	.164	.007	.361
08 JUL66 TONGA	9966.93	241.52	-.052	-.210	-.094	.103	.067	-.305	-.107	.118	-.029	.423
04 MAR 67 TONGA IS	9985.34	242.50	-.016	-.225	-.036	.080	.089	-.248	-.217	.093	-.006	-.370
29 MAR66 TONGA	10105.61	241.47	-.045	-.238	0	.087	.034	-.336	-.280	.035	-.066	-.405
20 MAR66 TONGA-2	10130.99	240.25	-.079	-.294	-.053	.074	.009	0	-.166	.120	-.101	.310
16 MAR66 TONGA	10140.74	239.98	-.071	-.242	-.012	0	-.024	-.321	-.272	.100	-.101	.465
21 MAY66 TONGA IS	10181.84	240.49	0	-.248	-.061	.097	.083	-.328	-.188	.077	.000	-.333
13 MAR66 TONGA	10186.53	240.96	-.100	-.198	-.161	.078	-.086	-.358	-.259	.028	-.097	0
01 JUN66 TONGA IS	10367.27	230.00	-.655	-.277	-.057	.067	.046	-.357	-.279	.108	-.086	0
27 JUN66 TONGA	10367.41	240.09	-.097	-.304	-.077	.071	-.002	-.359	-.208	.055	-.127	-.409
27 FEB 67 TONGA IS	10435.87	238.97	-.073	-.237	-.120	.045	-.064	-.385	-.212	.074	-.139	-.476
07 APR 66 TONGA IS	10446.25	238.77	-.022	-.306	-.061	.044	.161	-.321	-.132	.121	-.007	-.361
AVERAGE			-.050	-.251	-.070	.087	.031	-.322	-.207	.090	-.068	.379
SIGMA			.052	.046	.044	.031	.063	.051	.048	.043	.046	.081
N			16	17	16	16	18	17	20	20	18	17

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
12 MAR66 SAMOA	9565.29	243.40	0	-.177	-.252	-.512	-.408	.063	-.071	-.769	-.276	-.649
01 JAN 67 TONGA IS	9590.86	243.21	-.141	-.031	-.244	-.519	-.325	.063	-.173	-.803	-.144	-.704
12 MAR66 TONGA	9584.13	242.51	0	-.197	-.307	-.525	-.397	-.052	-.163	-.728	-.216	-.776
20 NOV65 TONGA IS	9661.03	243.82	-.131	0	0	0	0	-.037	-.216	-.676	0	-.833
05 JUL66 TONGA	9671.59	244.24	-.134	0	-.274	0	-.432	-.008	-.110	-.772	0	-.719
02 JAN66 TONGA IS.	9684.62	243.14	-.175	-.191	-.275	-.507	-.523	-.045	-.096	-.789	-.291	-.676
26 DEC65 TONGA IS.	9759.62	243.33	-.202	-.216	-.378	-.544	0	-.129	-.111	-.796	-.340	-.850
20 MAR66 TONGA-1	9796.93	242.86	[illegible]	-.218	-.239	-.472	-.598	-.034	-.109	-.807	-.409	-.776
11 AUG 66 TONGA IS	9952.22	240.90	-	-.020	-.240	-.403	-.385	.060	.082	-.667	-.310	-.657
08 JUL66 TONGA	9966.93	241.52	-.163	-.136	-.268	-.527	-.507	-.104	.090	-.754	-.345	-.712
04 MAR 67 TONGA IS	9985.34	242.50	-.154	-.123	-.244	0	-.483	.016	-.047	-.745	-.364	-.705
29 MAR66 TONGA	10105.61	241.47	-.296	-.183	-.209	-.457	-.544	-.019	-.025	-.736	0	-.721
20 MAR66 TONGA-2	10130.99	240.25	-.176	-.156	-.201	-.512	-.511	-.014	-.158	-.699	-.434	-.681
16 MAR66 TONGA	10140.74	239.98	-.213	-.192	-.288	-.567	-.574	.093	-.151	-.708	-.382	-.739
21 MAY66 TONGA IS	10181.84	240.49	-.121	-.122	-.141	-.420	-.441	.164	-.145	-.629	-.200	-.622
13 MAR66 TONGA	10186.53	240.96	0	-.120	-.235	-.610	-.440	-.029	-.682	-.834	-.398	-.767
01 JUN66 TONGA IS	10367.27	230.00	-.173	-.153	-.266	-.606	-.525	.086	-.200	-.679	-.400	0
27 JUN66 TONGA	10367.41	240.09	-.166	-.162	-.323	-.573	-.466	.065	-.273	-.719	-.220	-.736
27 FEB 67 TONGA IS	10435.87	238.97	-.086	-.196	-.257	-.552	-.513	.178	.065	-.739	-.083	-.819
07 APR 66 TONGA IS	10446.25	238.77	-.119	-.110	-.251	-.440	-.390	.188	.166	-.613	-.018	-.734
AVERAGE			-.161	-.150	-.258	-.519	-.470	.026	-.086	-.733	-.284	-.730
SIGMA			.055	.056	.049	.063	.073	.089	.113	.068	.121	.062
N			17	18	19	17	18	20	20	20	17	19

EVENT PARAMETERS

20 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
12 MAR66 SAMOA	-15.000	-173.600	85	14 19 38.0	.0424	.024	19
01 JAN 67 TONGA IS	-15.300	-173.600	33	07 05 48.6	.0782	-.005	19
12 MAR66 TONGA	-15.706	-173.000	83	14 26 57.6	.0594	.011	10
20 NOV65 TONGA IS	-15.400	-174.500	82	03 47 52.4	.0746	-.027	9
05 JUL66 TONGA	-15.200	-174.900	292	03 22 45.2	.0387	.011	16
02 JAN66 TONGA IS.	-16.000	-174.100	181	03 33 54.4	.0446	-.018	15
26 DEC65 TONGA IS.	-16.400	-174.700	380	16 44 44.0	.0719	-.033	16
20 MAR66 TONGA-1	-17.000	-174.500	187	07 47 50.2	.0660	-.041	20
11 AUG 66 TONGA IS	-19.300	-173.900	83	05 12 42.2	.0835	.065	20
08 JUL66 TONGA	-19.000	-174.500	5	22 12 23.2	.0574	.003	20
04 MAR 67 TONGA IS	-18.500	-175.400	225	06 16 21.9	.0370	.015	19
29 MAR66 TONGA	-20.000	-175.300	95	10 42 15.1	.0526	-.014	18
20 MAR66 TONGA-2	-21.006	-174.500	95	09 04 31.8	.0528	-.008	19
16 MAR66 TONGA	-21.200	-174.300	66	12 13 02.4	.0563	-.028	19
21 MAY66 TONGA IS	-20.900	-175.300	75	10 50 59.8	.0703	.046	19
13 MAR66 TONGA	-26.900	-175.400	65	18 40 40.7	.0660	-.039	18
01 JUN66 TONGA IS	-23.406	-174.900	24	11 47 33.1	.0551	-.023	18
27 JUN66 TONGA	-22.700	-175.800	60	08 38 45.8	.0569	-.026	20
27 FEB 67 TONGA IS	-23.900	-175.300	33	11 53 02.0	.0851	-.004	20
07 APR 66 TONGA IS	-24.100	-175.200	33	14 36 29.0	.1086	.065	20

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN66TRAVEL-TIME TABLES INCLUDING ELLIPTICITY

REFERENCE STATION A0

ANOMALY REGION = FIJI IS.
DISTANCE RANGE = 9910 TO 10869 KM AZIMUTH RANGE = 238.0 TO 247.4 DEGREES

	EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
19	JAN 67 FIGI IS	9910.27	247.37	-.087	-.243	-.081	-.040	-.026	-.337	-.321	-.058	-.101	-.465
09	DEC65 FIJI IS.-1	10135.38	244.84	0	0	0	-.005	.030	-.252	-.197	-.022	-.043	-.403
09	DEC65 FIJI IS.-2	10117.25	245.11	0	0	0	.059	0	-.270	-.158	0	-.065	0
20	FEB66 FIJI IS	10147.84	245.13	-.112	-.201	-.052	.005	-.128	0	-.214	.056	-.106	-.363
28	JAN66 FIJI IS	10147.84	245.13	-.053	-.101	-.052	.025	.022	-.285	-.173	.086	0	-.423
27	JAN66 FIJI IS.	10154.78	245.20	-.013	-.171	-.102	.045	-.108	-.316	-.194	.127	-.166	-.425
29	SEP66 FIJI IS	10157.69	242.18	-.066	-.265	-.075	.064	-.055	-.2 5	-.183	.052	-.104	-.390
10	MAR66 FIJI	10161.77	243.14	-.089	-.300	-.088	.031	-.060	-.356	-.184	.036	-.196	-.417
24	MAR66 FIJI	10172.89	239.86	-.116	-.391	-.165	-.008	-.069	-.315	-.304	.036	-.157	0
18	NOV65 FIJI IS	10181.56	244.11	0	0	0	0	0	0	-.261	-.020	.066	-.454
21	DEC65 FIJI IS.	10186.06	243.70	0	0	0	.202	0	-.241	-.150	.076	0	-.322
25	DEC65 FIJI IS.-4	10204.87	245.56	0	0	0	.108	-.020	-.334	-.147	.109	-.013	-.420
25	DEC65 FIJI IS.-6	10206.23	245.43	0	0	0	.157	-.022	-.234	-.096	.078	-.082	-.418
19	DEC65 FIJI IS.	10211.84	245.63	0	0	0	.089	-.019	-.254	-.198	-.011	-.069	-.411
25	DEC65 FIJI IS.-5	10213.19	245.50	0	0	0	0	-.090	-.303	-.117	0	0	-.389
26	MAY66 FIJI	10314.65	241.84	0	-.250	-.069	.050	.005	-.334	-.254	.016	-.030	-.370
17	JAN66 FIJI IS.	10389.84	243.23	-.109	-.363	-.096	0	0	-.398	-.193	.009	0	-.437
16	APR66 FIJI	10421.68	243.10	-.155	-.261	-.073	.060	-.057	-.362	-.209	.031	-.127	-.359
08	FEB66 FIJI IS.	10423.20	242.97	-.078	-.220	-.061	.038	-.011	-.324	-.156	.082	-.129	-.418
17	MAR66 FIJI	10462.72	243.53	.086	-.328	-.054	0	.035	-.299	-.072	.052	0	-.286
13	APR66 SO FIJI IS	10717.71	242.36	-.045	-.261	-.007	.086	.006	-.261	-.176	.051	.003	-.404
24	JUN 66 FIGI IS	10802.26	238.53	-.105	-.243	-.094	.067	.034	-.343	-.213	.128	.038	-.482
26	AUG66 KERMADEC IS	10869.08	238.00	-.020	-.248	.003	.124	.174	-.233	-.174	.074	-.031	-.364
	AVERAGE			-.069	-.262	-.077	.056	-.019	-.302	-.189	.047	-.073	-.401
	SIGMA			.059	.061	.036	.067	.067	.046	.059	.050	.071	.046
	N			14	15	15	19	19	21	23	21	18	21

	EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
19	JAN 67 FIGI IS	9910.27	247.37	-.251	-.253	-.328	-.484	-.290	.016	-.134	-.582	-.306	-.781
09	DEC65 FIJI IS.-1	10135.38	244.84	-.190	-.280	0	-.547	-.402	-.074	-.167	-.590	-.352	-.673
09	DEC65 FIJI IS.-2	10117.25	245.11	-.163	-.273	-.304	-.548	-.525	-.143	-.163	-.685	-.285	-.703
20	FEB66 FIJI IS	10147.84	245.13	-.168	0	-.457	-.587	-.423	-.156	-.347	-.683	-.355	-.842
28	JAN66 FIJI IS	10147.84	245.13	0	-.184	-.388	-.547	-.412	-.053	-.197	-.683	-.337	-.772
27	JAN66 FIJI IS.	10154.78	245.20	-.217	-.103	-.326	-.520	-.467	-.112	-.178	-.769	-.322	-.777
29	SEP66 FIJI IS	10157.69	242.18	-.150	-.234	-.331	0	-.486	-.004	-.159	-.684	-.165	-.742
10	MAR66 FIJI	10161.77	243.14	0	-.241	-.343	-.556	0	.015	-.181	-.664	-.079	-.736
24	MAR66 FIJI	10172.89	239.86	-.109	-.244	-.364	-.560	-.519	-.028	-.301	-.627	-.242	-.709
18	NOV65 FIJI IS	10181.56	244.11	-.290	0	0	0	-.378	-.230	0	-.627	-.262	-.800
21	DEC65 FIJI IS.	10186.06	243.70	-.114	0	-.183	-.471	-.480	-.026	-.192	-.540	-.152	-.724
25	DEC65 FIJI IS.-4	10204.87	245.56	-.116	-.164	-.334	-.557	-.424	.060	.058	-.761	-.238	-.740
25	DEC65 FIJI IS.-6	10206.23	245.43	-.113	0	0	0	0	-.039	.010	-.601	-.118	0
19	DEC65 FIJI IS.	10211.84	245.63	-.155	-.333	-.368	-.563	0	-.024	-.115	0	0	-.704
25	DEC65 FIJI IS.-5	10213.19	245.50	-.134	0	-.200	-.556	-.439	-.007	-.096	-.724	-.274	-.714
26	MAY66 FIJI	10314.65	241.84	-.201	-.284	-.247	-.502	-.496	.012	0	-.659	-.245	-.746
17	JAN66 FIJI IS.	10389.84	243.23	-.105	-.271	-.376	-.728	0	.072	-.282	-.760	-.046	-.609
16	APR66 FIJI	10421.68	243.10	-.144	-.242	-.363	-.585	-.406	.063	-.139	-.714	-.061	-.750
08	FEB66 FIJI IS.	10423.20	242.97	-.147	-.216	-.358	-.568	-.340	.124	-.044	-.678	.046	-.717
17	MAR66 FIJI	10462.72	243.53	-.093	0	-.115	-.300	-.268	.210	.172	-.756	.086	0
13	APR66 SO FIJI IS	10717.71	242.36	-.186	0	-.227	-.334	-.544	.001	-.630	-.622	-.023	-.710
24	JUN 66 FIGI IS	10802.26	238.53	-.079	-.120	-.330	-.622	-.472	.055	-.146	-.667	-.209	-.347
26	AUG66 KERMADEC IS	10869.08	238.00	-.142	-.018	-.057	-.313	-.465	.069	0	-.590	-.373	-.694
	AVERAGE			-.160	-.216	-.304	-.522	-.436	-.009	-.133	-.647	-.197	-.751
	SIGMA			.053	.081	.096	.104	.075	.096	.122	.064	.132	.056
	N			21	16	20	20	19	23	20	22	22	21

E V E N T P A R A M E T E R S

23	EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
10	JAN 67 FIGI IS	-14.800	-178.800	18	12 40 12.6	.0710	-.024	20
09	DEC65 FIJI IS.-1	-18.000	-178.200	650	13 12 55.5	.0722	-.027	16
09	DEC65 FIJI IS.-2	-17.700	-178.300	650	13 25 40.7	.0578	-.023	14
20	FEB66 FIJI IS	-17.900	-178.500	583	06 11 54.4	.0040	-.054	18
28	JAN66 FIJI IS	-17.900	-178.500	570	00 27 34.3	.0526	-.009	18
27	JAN66 FIJI IS.	-17.900	-178.600	680	02 01 34.7	.0600	-.021	20
29	SEP66 FIJI IS	-19.900	-176.200	244	02 44 10.0	.0214	-.006	19
10	MAR66 FIJI	-19.300	-177.000	320	12 15 19.4	.0503	-.018	18
24	MAR66 FIJI	-21.500	-174.400	101	04 04 55.5	.0757	-.057	10
18	NOV65 FIJI IS	-18.800	-177.900	421	20 00 19.0	.1190	-.052	10
21	DEC65 FIJI IS.	-19.100	-177.600	366	17 50 10.2	.0772	.046	14
25	DEC65 FIJI IS.-4	-18.000	-170.200	625	02 57 57.9	.0646	.021	17
25	DEC65 FIJI IS.-6	-18.100	-170.100	620	20 46 43.6	.0732	.047	12
19	DEC65 FIJI IS.	-18.000	-170.300	620	02 21 27.0	.0471	-.011	14
25	DEC65 FIJI IS.-5	-18.100	-170.200	620	10 20 45.1	.0452	-.004	13
26	MAY66 FIJI	-21.200	-176.900	238	18 30 07.4	.0394	-.007	18
17	JAN66 FIJI IS.	-20.800	-178.500	543	17 49 59.3	.0966	-.036	16
16	APR66 FIJI	-21.100	-178.600	511	15 23 29.3	.0619	-.006	20
08	FEB66 FIJI IS..	-21.200	-178.500	525	10 02 09.0	.0796	.025	20
17	MAR66 FIJI	-21.100	-179.200	626	15 50 32.2	.1563	.106	15
13	APR66 SO FIJI IS	-23.600	-179.900	550	04 27 54.8	.0776	.036	19
24	JUN 66 FIGI IS	-26.700	-177.300	146	08 17 49.1	.0643	.004	20
26	AUG66 KERMADEC IS	-27.500	-177.300	99	00 51 51.3	.1183	.070	19

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RELATIVE TRAVEL-TIME ANOMALIES

HEPRINGBTRAVEL-TIME TABLES

INCLUDING ELLIPTICITY

REFERENCE STATION A0

ANOMALY REGION = SANTA CRUZ

DISTANCE RANGE = 10663 TO 10731 KM AZIMUTH RANGE = 259.2 TO 261.0 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
11 MAR67 SANTA CRUZ	10678.95	260.91	-.054	-.235	-.047	-.040	-.161	-.275	-.176	-.024	-.145	-.379
09 MAR67 SANTA CRUZ	10671.39	260.84	-.118	-.206	-.050	-.021	-.166	-.213	-.196	-.019	-.202	-.379
09 MAR67 SANTA CRUZ	10671.39	260.84	0	-.159	0	.009	-.167	-.232	-.133	-.041	-.047	-.304
09 MAR67 SANTA CRUZ	10686.51	260.98	-.188	-.224	.156	-.130	-.265	-.238	-.219	-.016	-.238	-.173
13 JUN66 SANTA CRUZ	10730.79	259.23	-.070	-.044	.107	.098	-.060	-.222	-.104	.093	-.135	0
09 MAR67 SANTA CRUZ	10671.39	260.84	-.109	-.176	.040	-.141	-.207	-.214	-.236	-.070	-.275	0
09 MAR67 SANTA CRUZ	10663.41	260.91	-.013	-.105	.069	-.031	-.143	-.177	-.088	-.071	-.103	-.325
AVERAGE			-.092	-.164	.046	-.037	-.167	-.224	-.165	-.021	-.164	-.312
SIGMA			.061	.069	.083	.082	.062	.029	.057	.055	.080	.084
N			6	7	6	7	7	7	7	7	7	5

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
11 MAR67 SANTA CRUZ	10678.95	260.91	-.157	-.300	-.411	-.477	-.257	-.064	-.447	-.667	-.207	-.806
09 MAR67 SANTA CRUZ	10671.39	260.84	-.107	-.375	-.337	-.371	-.213	-.114	-.500	-.594	-.235	-.897
09 MAR67 SANTA CRUZ	10671.39	260.84	-.050	-.258	-.442	-.438	-.269	-.051	-.667	-.478	-.103	-.859
09 MAR67 SANTA CRUZ	10686.51	260.98	-.059	-.495	-.597	-.349	-.381	-.147	-.517	-.516	0	-.915
13 JUN66 SANTA CRUZ	10730.79	259.23	-.107	-.156	-.299	-.329	-.208	.103	-.594	-.509	-.001	-.801
09 MAR67 SANTA CRUZ	10671.39	260.84	-.058	-.465	-.549	-.369	-.173	-.147	-.551	-.589	-.381	-.960
09 MAR67 SANTA CRUZ	10663.41	260.91	-.151	-.285	-.387	-.281	-.209	-.071	-.488	-.519	-.167	-.940
AVERAGE			-.098	-.333	-.432	-.372	-.273	-.070	-.537	-.593	-.182	-.883
SIGMA			.045	.120	.106	.064	.075	.088	.074	.066	.128	.063
N			7	7	7	7	7	7	7	7	6	7

EVENT PARAMETERS

7 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
11 MAR67 SANTA CRUZ	-10.700	166.200	49	08 33 27.4	.0591	-.015	20
09 MAR67 SANTA CRUZ	-10.700	166.300	30	03 24 18.9	.0466	-.014	20
09 MAR67 SANTA CRUZ	-10.700	166.300	59	18 02 45.7	.0585	.017	18
09 MAR67 SANTA CRUZ	-10.700	166.100	33	05 38 14.9	.0904	-.035	19
13 JUN66 SANTA CRUZ	-12.200	167.100	259	18 08 38.4	.1044	.078	19
09 MAR67 SANTA CRUZ	-10.700	166.300	33	05 52 19.2	.0845	-.058	19
09 MAR67 SANTA CRUZ	-10.600	166.310	30	04 58 35.7	.0524	.028	20

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRINGS TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = SOLOMON ISLANDS

DISTANCE RANGE = 10921 TO 11065 KM AZIMUTH RANGE = 263.5 TO 273.1 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
29 JUL66 SOLOMON IS	10920.87	263.48	0	-.139	-.011	.006	-.129	0	-.170	-.072	0	0
05 AUG66 SOLOMON IS	10990.63	263.55	-.097	-.152	-.056	-.085	-.110	0	-.216	-.094	-.087	0
15 JUN 66 SOLOMON IS	11026.23	265.04	-.160	-.162	.060	-.185	-.131	-.291	-.335	-.144	-.142	-.230
01 AUG66 SOLOMON IS	11026.53	264.90	-.051	-.165	-.013	-.065	-.212	-.148	-.160	-.044	0	-.292
28 AUG66 SOLOMON	11032.16	273.08	-.074	-.117	-.076	-.115	-.180	-.160	-.176	-.101	-.069	-.291
15 JUN 66 SOLOMON IS	11026.53	264.90	-.042	-.262	-.029	-.236	-.274	-.204	-.313	-.113	-.108	-.349
15 JUN 66 SOLOMON IS	11012.52	264.19	-.117	-.219	-.012	-.130	-.214	-.214	-.246	-.156	-.189	-.200
13 JAN 67 SOLOMON IS	11035.37	264.41	-.094	-.210	-.078	-.149	-.190	-.202	-.249	-.066	-.163	-.331
25 JUN 66 SOLOMON IS	11033.65	265.11	-.103	-.057	.029	-.064	-.172	-.213	-.172	-.091	-.359	0
17 JUN 66 SOLOMON IS	11034.15	264.97	-.181	-.142	-.010	-.145	-.153	-.103	-.174	-.034	-.207	-.139
15 JUN 66 SOLOMON IS	11065.25	264.97	-.111	-.282	-.070	-.205	-.223	-.303	-.154	-.205	-.228	0
28 JUN 66 SOLOMON IS	11018.90	264.83	-.243	-.192	-.038	-.126	-.276	-.215	-.252	-.102	-.101	-.309
15 JUN 66 SOLOMON IS	11064.96	265.12	0	-.264	.003	-.114	-.246	-.221	-.204	-.049	-.130	-.338
AVERAGE			-.116	-.182	-.023	-.124	-.193	-.207	-.218	-.098	-.162	-.285
SIGMA			.059	.065	.041	.064	.054	.058	.058	.049	.083	.064
N			11	13	13	13	13	11	13	13	11	9

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
29 JUL66 SOLOMON IS	10920.87	263.48	0	0	-.399	-.205	-.283	0	0	0	-.242	-.923
05 AUG66 SOLOMON IS	10990.63	263.55	-.234	0	-.370	-.270	0	-.226	0	0	-.401	-.996
15 JUN 66 SOLOMON IS	11026.23	265.04	-.044	-.491	-.509	-.107	-.349	-.196	-.323	-.204	-.066	-.970
01 AUG66 SOLOMON IS	11026.53	264.90	-.106	-.335	-.373	-.149	-.170	-.044	-.248	-.503	-.044	-.844
28 AUG66 SOLOMON	11032.16	273.08	-.200	-.339	-.229	-.169	-.233	-.157	-.035	-.298	-.023	-.782
15 JUN 66 SOLOMON IS	11026.53	264.90	-.171	-.523	-.417	-.037	-.211	-.091	-.308	-.265	-.076	-.912
15 JUN 66 SOLOMON IS	11012.52	264.19	-.164	-.490	-.465	-.128	-.217	-.124	-.323	-.304	-.065	-.833
13 JAN 67 SOLOMON IS	11035.37	264.41	-.131	-.403	-.424	-.071	-.262	-.131	-.277	-.284	-.037	-.947
25 JUN 66 SOLOMON IS	11033.65	265.11	-.217	-.468	-.550	-.226	-.206	-.205	0	-.394	-.059	0
17 JUN 66 SOLOMON IS	11034.15	264.97	-.137	-.392	-.484	-.098	-.235	-.223	0	-.249	0	-.980
15 JUN 66 SOLOMON IS	11065.25	264.97	-.230	-.393	-.394	-.200	-.247	-.226	-.374	-.316	-.099	-.936
28 JUN 66 SOLOMON IS	11018.90	264.83	-.120	-.503	-.431	-.118	-.243	-.129	-.241	-.313	0	-.963
15 JUN 66 SOLOMON IS	11064.96	265.12	-.223	-.345	-.477	-.212	-.316	-.194	-.364	-.429	-.140	-.988
AVERAGE			-.164	-.420	-.425	-.153	-.254	-.162	-.277	-.329	-.114	-.923
SIGMA			.060	.071	.000	.068	.049	.059	.102	.079	.113	.060
N			12	11	13	13	12	12	9	11	11	12

E V E N T P A R A M E T E R S

13 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
29 JUL66 SOLOMON IS	-10.500	162.800	75	11 46 15.6	.0670	.012	11
05 AUG66 SOLOMON IS	-10.900	162.300	93	04 33 07.4	.0909	-.024	14
15 JUN 66 SOLOMON IS	-10.100	161.000	39	06 13 52.3	.0693	-.011	20
01 AUG66 SOLOMON IS	-10.200	161.100	70	03 23 03.1	.0728	.037	19
28 AUG66 SOLOMON	-4.600	155.200	509	10 03 03.0	.0909	.050	20
15 JUN 66 SOLOMON IS	-10.200	161.100	33	01 32 55.5	.0663	-.005	20
15 JUN 66 SOLOMON IS	-10.600	161.700	33	01 32 12.0	.0394	-.003	20
13 JAN 67 SOLOMON IS	-10.600	161.400	32	13 48 11.7	.0376	.007	20
25 JUN 66 SOLOMON IS	-10.100	160.900	78	16 01 21.5	.0787	-.015	17
17 JUN 66 SOLOMON IS	-10.200	161.000	33	22 26 04.1	.0643	.020	18
15 JUN 66 SOLOMON IS	-10.400	160.800	31	00 59 45.8	.0630	-.034	19
28 JUN 66 SOLOMON IS	-10.200	161.200	33	11 39 02.1	.0493	-.810	19
15 JUN 66 SOLOMON IS	-10.300	160.700	18	16 36 24.1	.0579	-.028	19

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN68TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = CONTINENTAL U.S.****AVERAGES NOT VALID****
DISTANCE RANGE = 683 TO 2877 KM AZIMUTH RANGE = 101.3 TO 280.1 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
29 JUL66 CHASE VII	2877.10	101.32	.312	0	0	.270	0	.278	0	.300	0	0
21 OCT65 E MISSOURI	1416.70	123.71	0	0	0	0	.297	-.021	-.074	0	.228	0
03 APR66 COLORADO	814.41	181.46	.093	.115	.020	.001	.066	0	-.102	.108	.077	0
23 JAN66 NEW MEXICO	1077.96	183.22	.063	-.056	.196	.103	.303	.232	0	0	.037	-.015
17 MAR66 UTAH	682.75	219.11	-.149	-.180	-.167	0	-.031	0	-.287	-.000	-.172	-.223
12 SEP66 NO CALIFORN	1388.15	239.29	-.029	-.008	-.011	.166	.083	-.198	-.066	.133	.189	-.016
23 OCT65 WASH STATE	1230.21	280.10	0	0	0	0	0	-.317	0	0	0	0
	AVERAGE		.058	-.032	.009	.157	.143	-.006	-.132	.135	.071	-.084
	SIGMA		.171	.122	.149	.115	.149	.259	.104	.124	.156	.120
	N		5	4	4	4	5	5	4	4	5	3

EVENT NAME	DISTANCE	AZIMUTH	D3	DA	E1	E2	E3	E4	F1	F2	F3	F4
29 JUL66 CHASE VII	2877.10	101.32	.014	.618	0	.346	-.263	.454	.968	-.381	-.443	0
21 OCT65 E MISSOURI	1416.70	123.71	-.012	.341	.627	.200	.496	0	.664	0	0	0
03 APR66 COLORADO	814.41	181.46	.174	0	0	.063	-.200	.071	.475	.239	.007	.021
23 JAN66 NEW MEXICO	1077.96	183.22	0	.338	.331	.235	-.027	-.203	.274	.015	.114	.075
17 MAR66 UTAH	682.75	219.11	-.089	.249	.281	-.706	-.070	.296	-.233	-.862	-.416	.667
12 SEP66 NO CALIFORN	1388.15	239.29	.179	.385	.120	-1.067	-.192	.223	0	-1.043	.294	.033
23 OCT65 WASH STATE	1230.21	280.10	.575	-.311	0	0	-.173	.436	0	0	.032	-.002
	AVERAGE		.140	.270	.340	-.155	-.034	.213	.429	-.456	-.069	.278
	SIGMA		.238	.310	.212	.585	.332	.248	.450	1.149	.297	.335
	N		6	6	4	6	7	6	5	5	6	5

E V E N T P A R A M E T E R S

7 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
29 JUL66 CHASE VII	36.600	-74.100	1	04 36 24.8	.3183	.145	12
21 OCT65 E MISSOURI	37.500	-91.000	22	02 04 38.3	.3120	.188	10
03 APR66 COLORADO	39.363	-106.462	0	16 21 33.5	.2149	.064	16
23 JAN66 NEW MEXICO	37.000	-106.900	10	01 56 38.0	.2130	.053	17
17 MAR66 UTAH	41.800	-111.400	38	11 47 49.0	.3004	-.182	18
12 SEP66 NO CALIFORN	39.400	-120.100	8	16 41 01.7	.2972	-.091	19
23 OCT65 WASH STATE	47.500	-122.400	23	16 27 59.3	.3607	-.079	7

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R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN68TRAVEL-TIME TABLES

INCLUDING ELLIPTICITY

REFERENCE STATION A0

ANOMALY REGION = MISC. EASTER IS AND PACIFIC OCEAN
DISTANCE RANGE = 4484 TO 10718 KM AZIMUTH RANGE = 184.3 TO 253.0 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
29 NOV 66 N EASTER I	6185.31	184.28	-.133	-.069	.065	.011	.159	.027	-.053	.192	.065	-.035
20 JUL66 N EASTER CD	6659.33	185.83	0	-.083	-.004	0	0	0	.043	.184	.158	-.119
18 SEP66 S PACIFIC 0	7681.44	207.05	-.028	-.199	-.071	.250	.219	-.196	-.191	.067	.111	-.167
21 JAN 67 EASTER IS	10718.09	185.58	-.045	-.014	.070	.198	.231	-.077	-.047	.176	.141	-.088
24 SEP66 N PACIFIC 0	4484.06	214.97	-.006	-.119	-.042	.254	.294	-.181	-.056	.071	.070	-.194
05 SEP66 HAWAII	5393.59	253.04	.098	-.042	-.174	.108	.055	-.110	-.306	.053	-.046	-.023
AVERAGE			-.023	-.088	-.023	.164	.191	-.105	-.102	.124	.063	-.138
SIGMA			.083	.065	.096	.104	.090	.087	.125	.066	.073	.070
N			5	6	6	5	5	5	6	6	6	6

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
29 NOV 66 N EASTER I	6185.31	184.28	.104	.542	.482	-.450	-.030	.135	.493	-.456	.004	-.136
20 JUL66 N EASTER CD	6659.33	185.83	-.012	0	0	-.279	-.064	.138	.536	-.439	-.168	-.112
10 SEP66 S PACIFIC 0	7681.44	207.05	-.283	.538	.554	-.313	-.369	.541	.541	-.268	-.184	.165
21 JAN 67 EASTER IS	10718.09	185.58	-.009	.324	.172	-.434	-.261	.100	-.083	-.441	-.423	-.291
24 SEP66 N PACIFIC 0	4484.06	214.97	-.132	.572	.698	-.388	-.123	.223	.472	-.323	-.149	.360
05 SEP66 HAWAII	5393.59	253.04	-.480	-.077	-.219	-.108	-.438	.111	0	-.714	0	-.551
AVERAGE			-.135	.380	.337	-.339	-.247	.200	.436	-.443	-.164	-.093
SIGMA			.214	.274	.366	.107	.230	.169	.297	.150	.153	.326
N			6	5	5	6	6	6	5	6	5	6

E V E N T P A R A M E T E R S

6 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
29 NOV 66 N EASTER I	-9.160	-109.000	33	22 54 50.0	.1244	.047	20
20 JUL66 N EASTER CD	-13.300	-111.400	33	13 22 54.0	.0672	.052	14
18 SEP66 S PACIFIC 0	-18.480	-132.800	33	06 40 36.0	.1392	.036	20
21 JAN 67 EASTER IS	-49.800	-114.800	33	02 54 00.8	.1560	-.040	20
24 SEP66 N PACIFIC 0	12.000	-130.800	33	08 57 10.2	.1626	.075	20
05 SEP66 HAWAII	19.400	-155.600	3	16 33 19.9	.2707	-.171	18

11 15 67

R E L A T I V E T R A V E L - T I M E A N O M A L I E S

HERRIN68TRAVEL-TIME TABLES REFERENCE STATION A0

INCLUDING ELLIPTICITY

ANOMALY REGION = MISCELLANEOUS - NORTH

DISTANCE RANGE = 2191 TO 9597 KM AZIMUTH RANGE = 6.2 TO 334.5 DEGREES

EVENT NAME	DISTANCE	AZIMUTH	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
23 JUL66 ON CHRLTTE	2191.17	303.A8	0	-.001	.046	0	.065	-.021	0	-.024	0	-.057
14 JUL 66 G. ALASKA	3150.73	305.73	.121	.094	.008	-.102	0	0	0	-.091	0	0
02 JAN66 BAFFIN BAY	3539.68	1A.90	0	0	0	.032	-.013	.007	-.012	.026	.037	-.062
28 AUG66 ALASKA	3809.42	325.68	-.043	.028	-.063	-.063	-.011	-.019	-.005	-.039	-.007	-.221
10 JUN68 ALASKA PEN	3510.67	30A.19	.085	.105	.000	-.019	.179	.119	.007	-.015	.199	.033
23 DEC65 ALASKA PEN.	3520.36	31A.49	0	0	0	.010	0	.199	0	-.118	.283	-.809
29 APR68 ALASKA PEN.	3A00.03	301.A8	-.035	.120	-.081	-.039	.077	.140	.034	-.030	.233	.085
12 AUG66 S ALASKA	3948.52	30A.A7	-.071	.091	-.039	-.084	.005	.012	.003	-.034	.070	0
17 JUL66 BERING SEA	4190.33	307.A8	0	.099	0	0	.118	0	.061	-.002	0	.027
17 DEC 66 JAN MAYEN	5285.90	2A.77	.225	.041	.038	.061	.124	-.199	-.139	-.011	-.051	0
27 OCT68 NOVAYA ZEML	6616.08	A.93	-.116	-.077	-.031	.015	-.115	-.103	-.079	-.077	-.109	-.153
10 JAN67 E RUSSIA	7765.47	33A.46	.047	.041	-.011	-.077	0	.169	.050	.040	.229	.035
30 JUN 68 CST E RUSS	8486.41	32A.A3	-.143	.048	.004	-.079	-.183	-.009	.027	-.132	.024	-.186
01 DEC65 S. ALGERIA	9596.94	5A.A2	0	0	0	0	.159	-.176	-.253	.255	.844	-.377
	AVERAGE		.006	.053	-.011	-.031	.037	.003	-.028	-.022	.079	-.001
	SIGMA		.119	.050	.038	.055	.114	.132	.094	.094	.119	.128
	N		9	11	10	11	11	12	11	14	11	11

EVENT NAME	DISTANCE	AZIMUTH	D3	D4	E1	E2	E3	E4	F1	F2	F3	F4
23 JUL88 ON CHRLTTE	2191.17	303.A8	.014	0	0	-.089	-.152	.247	0	0	0	-.174
14 JUL 88 G. ALASKA	3150.73	305.73	0	-.010	0	.149	-.113	-.150	.880	-.297	.165	-.199
02 JAN68 BAFFIN BAY	3539.68	1A.90	0	-.101	-.012	-.008	-.162	-.372	-.832	-.380	-.179	-.501
28 AUG66 ALASKA	3809.42	325.68	-.109	-.033	-.107	-.091	-.258	-.139	.091	-.419	-.134	-.203
10 JUN66 ALASKA PEN	3510.67	30A.19	.009	.072	0	0	0	0	0	0	0	0
23 DEC65 ALASKA PEN.	3520.36	31A.49	0	-.049	-.053	0	0	-.278	.131	-.178	.094	-.091
29 APR66 ALASKA PEN.	3A00.03	301.68	.080	.013	.003	.086	-.087	.017	-.020	0	-.013	-.091
12 AUG66 S ALASKA	3948.52	30A.A7	-.074	.023	.059	-.110	-.274	-.010	-.040	-.558	-.210	-.078
17 JUL68 BERING SEA	4190.33	307.A8	.002	0	0	0	0	-.073	0	-.290	.080	-.197
17 DEC 66 JAN MAYEN	5285.90	2A.77	-.231	0	-.178	-.303	-.430	-.373	-.227	-.592	-.173	-.795
27 OCT88 NOVAYA ZEML	6616.08	A.93	-.185	-.121	-.081	-.335	-.469	-.305	-.392	-.622	-.527	-.566
10 JAN67 E RUSSIA	7765.47	33A.46	-.282	.107	.070	.248	-.415	-.201	.599	-.245	-.141	-.236
30 JUN 68 CST E RUSS	8486.41	32A.43	-.167	-.183	-.186	.045	-.252	-.017	.085	-.624	0	-.492
01 DEC65 S. ALGERIA	9596.94	5A.A2	0	.110	.044	-.170	-.205	-.005	-.005	-.217	-.253	-.194
	AVERAGE		-.090	-.008	-.039	-.053	-.220	-.128	.017	-.364	-.117	-.293
	SIGMA		.116	.082	.090	.180	.122	.179	.244	.161	.194	.222
	N		10	11	10	11	11	13	11	11	11	13

E V E N T P A R A M E T E R S

14 EPICENTERS	LATITUDE	LONGITUDE	DEPTH	ORIGIN TIME	SHOCK SIGMA	AV. ERROR	NO. STA
23 JUL66 ON CHRLTTE	5A.500	-134.900	33	19 34 57.0	.1341	.068	11
14 JUL 66 G. ALASKA	56.200	-149.800	33	12 18 17.0	.1193	.057	13
02 JAN66 BAFFIN BAY	74.600	-71.200	33	11 51 48.0	.0949	-.030	16
28 AUG66 ALASKA	67.100	-161.900	14	10 19 34.8	.0577	-.028	20
10 JUN66 ALASKA PEN	57.400	-155.700	67	14 12 15.0	.0880	.071	12
23 DEC65 ALASKA PEN.	58.600	-155.900	121	02 14 49.0	.14A2	.071	12
29 APR66 ALASKA PEN.	53.800	-157.800	33	01 46 43.0	.1470	.071	19
12 AUG66 S ALASKA	52.900	-161.600	31	20 16 59.8	.0803	-.005	19
17 JUL66 BERING SEA	56.500	-186.900	35	01 03 03.6	.1027	.088	18
17 DEC 66 JAN MAYEN	70.700	-14.000	27	05 59 10.2	.2043	-.112	18
27 OCT66 NOVAYA ZEML	73.400	54.800	0	05 57 58.0	.1979	-.136	28
10 JAN67 E RUSSIA	56.600	120.800	11	05 34 32.8	.1061	.073	19
30 JUN 66 CST E RUSS	43.600	132.200	A54	00 59 48.3	.1100	-.040	19
01 DEC65 S. ALGERIA	2A.000	5.100	0	10 29 58.0	.1617	-.001	15

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13. ABSTRACT

Travel-time anomalies at LASA, computed from 626 teleseisms with the November 1966 Herrin tables, are separated into various regions and then averaged. Several observations are made concerning the results.

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14. KEY WORDS	LINK A ROLE	LINK A WT	LINK B ROLE	LINK B WT	LINK C ROLE	LINK C WT
LASA						
Travel-Times						
Anomalies						
Seismic Arrays						

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