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TALLAHASSEE, FLORIDA

A Catalog of Radio Observations of Jupiter 1961-1964

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INTRODUCTION

The decameter-wave radiation from Jupiter has been studied at the Florida State University since 1961. In 1963 the program of study was extended to include spaced-site observations by stations in England and in South Africa. Other stations were established in 1964 in Nigeria, Spain, and Norway. The locations of these stations are shown in Table 1.

All of the observations have been made with the aural monitoring technique with the exception of some made at Grahamstown, South Africa. In every other case an observer was present during the entire period of observation. Jupiter noise was identified according to the following criteria, which have been discussed in more detail elsewhere.[1]

1. Jupiter must be in the reception pattern of the antenna.

2. Displacement on recorders must show an obvious increase above the galactic noise level.[2]

3. The noise must have the characteristic sound.

4. The noise must not tune out over a bandwidth of about 0.5 Mc/s.

5. The noise must not be identifiable as a terrestrial effect, e. g., car ignition, static, power-line interference.

Each event was assigned a subjective identification number 1, 2, or 3, according as the identification was uncertain, probable, or certain in the judgement of the observer on duty at the time. Observing conditions and intensity usually influenced the choice of this number. Some observations at Grahamstown were monitored but identification was also based on a comparison of records taken at two local South African sites separated by about 100 miles.

The usefulness of published data by Warwick and Kreiss,[3] and by Douglas and Smith[4] and the encouragement of a recent NASA contract[5] to microfilm the Florida State University records for the Goddard Space Science Data Center have stimulated the production of this catalog.

STATION NAME	LOCAL SUPERVISOR	LATITUDE	LONGITUDE
Tallahassee	Mr. C. H. Barrow Department of Physics Florida State University Tallahassee, Florida U. S. A.	30°27'N	84°18'W
Trondheim	Dr. Halvard Torgerson Fysisk Institutt Norges Tekniske Høgskole Trondheim, Norway	63°25'N	10°23'E
St. Osyth	Mr. F. W. Hyde 27 Carlton Road Clacton-on-Sea Essex, England	51°47'N	1°02'E
Valencia	Sr. Don Luis Celda Martinez Centro Meteorologico de Levante Botanico Cavanilles s/n. Valencia 10, Spain	39°30'N	0°21'W
Ibadan	Professor A. J. Lyon Department of Physics University of Ibadan Ibadan, Nigeria	7°40'N	3°50'E
Grahamstown	Mr. G. M. Gruber Department of Physics Rhodes University Grahamstown, South Africa	33°19'S	26°26'E

EQUIPMENT AND REMARKS

Jupiter was observed at Tallahassee during the 1961 apparition using two crossed arrays of eight dipoles at 18.3 and 24.0 Mc/s, a square corner reflector containing a single folded dipole at 18.7 Mc/s, and an east-west-aligned array of four whole-wave center-fed dipoles at 19.5 Mc/s.

Hallicrafters SX-62A receivers were used; the rectified audio outputs from these were fed to Elliott pen-recorders moving at 24 inches per hour during a noise storm at 18.3 and 24.0 Mc/s and at six inches per hour otherwise. The recorder time constant was 0.25 seconds and the receiver bandwidth was 5 kc/s. Jupiter was observed daily for about four hours around transit from April 6 to August 12, 1961 at 18.3, 18.7, and 19.5 Mc/s and from May 5 to August 12 at 24.0 Mc/s.

For observations of Jupiter during 1962 at Tallahassee the antennas were crossed five-element Yagis operating at 16, 18, 22, and 26 Mc/s, an 18 Mc/s square corner reflector and a 38 Mc/s phase-switched interferometer consisting of two square corner reflectors six wavelengths apart.

The output from the Hallicrafters SX-62A receivers was recorded with Elliott recorders moving at six inches per hour. During a noise storm an eight-channel Brush recorder was run at two millimeters per second for the observation of left- and right-hand components of polarization at the four lower frequencies. The Brush recorder time constant was 0.1 seconds.

Observations were made daily for about five hours around transit from April 25 to August 27, 1962.

In 1963 two additional stations were incorporated in the observational program at St. Osyth, England, and Grahamstown, South Africa. The combined observations from these stations, together with those at Tallahassee, allowed monitoring of Jupiter for 16 hours daily from July 17 to November 25, 1963. Observations at Tallahassee began July 13.

Antenna-receiver-recorder systems used at Tallahassee remained the same as in 1962 with the exception of the 38 Mc/s interferometer which was not used. At St. Osyth a square corner reflector operating at 18 Mc/s fed a Hallicrafters SX-62A receiver. The output was recorded with an Elliott recorder moving at six inches per hour. The recorder constant was 0.25 seconds and the receiver bandwidth about 5 kc/s.

At Grahamstown an eight-dipole broadside array in conjunction with a folded dipole about 100 miles away provided comparison records for identification when no observer was present. The receiver bandwidth was about 8 kc/s and the recorder constant was 0.8 seconds.

In 1964 the spaced-site observations were extended to include stations in Nigeria, Spain, and Norway along a rough north-south line through St. Osyth. Observations were continued at Tallahassee, St. Osyth and Grahamstown.

The antenna-receiver-recorder systems remained unchanged

from 1963 operation at Tallahassee and Grahamstown. At Trondheim, Norway, St. Osyth, England, Valencia, Spain and Ibadan, Nigeria, the antenna-receiver-recorder systems were standardized. An 18 Mc/s four-element Yagi fed a Hallicrafters S-108 receiver. The receiver output was recorded by an Elliott recorder operating at 24 inches per hour during a noise storm but at six inches per hour at other times in the absence of high speed recorders which were not available at that time. The recorder constant was 0.25 seconds and the receiver bandwidth was 6 kc/s.

Observations were made from August 1 to December 15, 1964, at all outstations. At Tallahassee the observing season was from July 27, 1964, to January 14, 1965, except at 18 Mc/s which was inoperative after December 31, 1964.

REMARKS ON TABULATION OF THE DATA

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During the observing season daily log sheets are kept in which are noted the date the watch ends, the beginning and ending times in Universal Time of observation and any activity, the identification number, the System II Central Meridian Longitude, the Julian date, the average of the three largest Jupiter noise deflections, and the average galactic background level. Later this information is transferred directly to IBM punch cards.

For this catalog a program was devised which prints out the year, frequency, and station at which the observations were made. Beneath are the month, day, begin and end time in Universal Time of observation and activity, the identification number, and the beginning and ending time of activity in System III (1957) Central Meridian Longitude.

A complete list of 18 Mc/s observations at Tallahassee is provided for each year. In addition there is a combined list of outstation observations during 1964 in which is included only activity reported simultaneously or nearly simultaneously at two or more stations. This restriction is imposed as an additional identification criterion. author

For other frequencies used at Tallahassee and for individual outstations a list containing reported activity only is included with a notation of days on which there was no

observation at a particular frequency or outstation. More specific information regarding inactive periods at these frequencies and stations may be obtained upon request from the Florida State University Radio Observatory. A smoothed probability histogram of each year's 18 Mc/s observations is included. The 1964 histogram is a composite of the Tallahassee and the combined outstation observations.

REFERENCES

1. Barrow, C. H. (1964) Polarization Observations of Jupiter at Decameter Wavelengths, Icarus, 3, 66

2. At a recent conference of Jupiter observers at the NASA Goddard Space Flight Data Center, Greenbelt, Maryland, April, 1965, the following suggestions were made regarding the definitions of an event and of a burst. An event is a signal of Jovian origin whose intensity is equal to or greater than three times the rms system noise in any given five-minute interval measured from 0^h U.T. A burst is a signal of Jovian origin whose intensity is equal to or greater than three times the rms system noise on a time scale of one second or longer. These approximate to the considerations implied by criterion 2.

3. Warwick, J. W. and Kreiss, W. T., IGY Solar Activity Report Series, Number 28, November 2, 1964.

4. Douglas, J. N. and Smith, H. J. (1963) Decametric Radiation from Jupiter. I. Synoptic Observations 1957-1961, Astron. J., 68. 3

5. National Aeronautics and Space Administration, Contract No. NAS5-9838

1961 18.3 TALLAHASSEE

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
4	6	1033	1249					
4	8	1043	1255	1244	1247	1	276	278
4	9	1055	1155					
4	10	1020	1205	1054	1058	1	150	153
4	11	1034	1215					
4	13	1010	1215					
4	14	1006	1215					
4	15	1003	1100	1025	1035	1	165	171
4	16	0959	1148					
4	17	0956	1230	1137	1230	1	150	182
4	18	0952	1210					
4	19	1103	1304	1200	1231	2	105	123
4	20	0945	1215					
4	21	0942	1215					
4	22	0938	1210					
4	23	0935	1039					
4	23	1104	1124					
4	24	0931	1215					
4	25	0928	1158					
4	26	0924	1215					
4	28	0920	1129					
4	29	1034	1130					
4	30	0910	1230					
5	1	0906	1215					
5	2	0903	1215					
5	3	0900	1215	1201	1215	1	53	61
5	4	0855	1215	0953	1000	2	126	130
5	4	0855	1215	1100	1203	1	166	205
5	5	0910	1155					
5	6	0848	1215					
5	7	0847	1215					
5	8	0850	1205					
5	9	0837	0935					
5	10	0833	1156	0928	1015	2	294	323
5	10	0833	1156	1055	1114	3	347	358
5	11	0829	1205	0856	0858	2	65	67
5	11	0829	1205	1023	1113	2	118	148
5	12	0840	1215					
5	13	0835	1215					
5	14	0818	1215					

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
5	15	0815	1200					
5	16	0811	1215					
5	17	0807	1202	1018	1102	1	299	325
5	18	0803	1112	1018	1035	2	89	99
5	19	0800	1042					
5	20	0820	1110					
5	21	0751	1105					
5	22	0747	1108	0747	0756	2	240	246
5	22	0747	1108	0907	0945	2	289	312
5	24	0740	1115	1045	1113	2	289	306
5	25	0736	0926					
5	26	0740	1117					
5	27	0800	0820					
5	27	0910	0939					
5	28	0724	1123					
5	29	0720	1120	0848	0906	3	251	262
5	30	0716	1110					
5	31	0712	1110	0925	1006	2	215	240
6	1	0708	1100					
6	2	0704	1110	1020	1054	2	189	210
6	3	0724	1125	0740	0750	1	243	249
6	3	0724	1125	0917	0945	3	302	319
6	4	0656	1145					
6	5	0652	1125	0748	0931	1	189	252
6	6	0648	1132	1106	1132	1	100	115
6	7	0645	1050					
6	8	0640	1010					
6	9	0636	1030					
6	10	0915	1020					
6	11	0627	1100	0659	0730	3	344	2
6	12	0623	1100					
6	13	0619	1105					
6	14	0615	1045					
6	15	0611	1045					
6	16	0606	1045					
6	17	0602	0710					
6	17	0808	1102					
6	18	0605	1030					
6	19	0554	1020					
6	20	0720	1020					
6	22	0825	1015	0827	0830	1	254	256

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
6	23	0537	1010					
6	24	0533	0940					
6	26	0754	0847					
6	27	0520	0950	0848	0919	2	300	319
6	28	0515	1000					
6	29	0511	1011	0851	0910	3	243	255
6	30	0512	1000					
7	1	0540	0940	0543	0615	2	71	90
7	2	0510	0945	0836	0848	3	326	333
7	3	0500	0954	0742	0758	3	84	94
7	3	0500	0954	0906	0925	2	135	147
7	4	0712	0930	0717	0742	1	220	235
7	5	0445	0535					
7	5	0615	0905					
7	6	0455	0930					
7	7	0705	0925					
7	8	0500	0915					
7	9	0435	0920					
7	10	0527	0900					
7	11	0418	0900					
7	12	0420	0905					
7	13	0410	0900					
7	14	0420	0900					
7	15	0412	0843	0708	0737	2	72	89
7	16	0450	0855					
7	17	0355	0852					
7	18	0347	0840					
7	19	0350	0830	0545	0607	3	264	278
7	20	0400	0825	0406	0447	2	355	20
7	21	0532	0820	0639	0657	2	238	249
7	22	0330	0830					
7	23	0325	0825					
7	24	0330	0815					
7	25	0315	0725					
7	26	0330	0800	0513	0542	3	220	237
7	26	0330	0800	0650	0714	2	278	293
7	27	0307	0800					
7	28	0415	0740	0542	0543	1	179	179
7	30	0310	0745					
7	31	0300	0700					

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
8	1	0245	0522					
8	2	0250	0640					
8	4	0232	0710					
8	5	0235	0715					
8	6	0225	0630					
8	7	0227	0650	0516	0529	3	229	237
8	8	0215	0650					
8	9	0209	0700					
8	10	0240	0705					
8	11	0201	0645					
8	12	0156	0635	0418	0447	2	228	245

1961 18.7 TALLAHASSEE

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
4	19	1103	1304	1157	1231	2	103	123
5	3	0900	1215	1206	1215	1	56	61
5	4	0855	1215	0953	1000	2	126	130
5	4	0855	1215	1108	1203	1	171	205
5	10	0833	1156	0945	1015	2	304	323
5	10	0833	1156	1055	1114	3	347	358
5	11	0829	1205	1023	1123	1	118	154
5	11	0829	1205	0856	0858	2	65	67
5	13	0835	1215	1119	1130	1	93	100
5	17	0807	1202	1025	1113	1	303	332
5	18	0803	1115	1014	1040	2	87	102
5	22	0747	1145	0748	0756	2	241	246
5	22	0747	1145	0908	0916	2	289	294
5	24	0740	1125	1045	1057	2	289	296
5	29	0720	1120	0848	0906	3	251	262
5	31	0712	1110	0924	1005	2	214	239
6	2	0704	1110	1006	1047	2	181	206
6	3	0729	1130	0740	0750	1	243	249
6	3	0729	1130	0912	0943	3	299	318
6	5	0652	1125	0748	0931	1	189	252
6	6	0648	1140	1110	1130	1	102	114
6	22	0825	1015	0827	0830	1	254	256
6	27	0520	0950	0854	0928	2	304	324
6	29	0511	1011	0851	0903	3	243	250
7	1	0540	0940	0543	0607	2	71	85
7	2	0510	0945	0834	0852	3	325	336
7	3	0500	0954	0742	0758	3	84	94
7	3	0500	0954	0906	0924	2	135	146
7	4	0712	0930	0719	0740	1	221	234
7	15	0407	0843	0703	0737	2	69	89
7	19	0350	0830	0544	0605	3	264	276
7	20	0400	0825	0406	0440	2	355	16
7	21	0532	0820	0650	0657	1	245	249
7	26	0330	0713	0513	0542	3	220	237
7	26	0330	0713	0647	0713	2	277	292
8	7	0227	0650	0519	0529	2	231	237
8	12	0156	0635	0343	0445	2	206	244

1961 19.5 TALLAHASSEE

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
4	9	1023	1215	1106	1137	1	7	26
4	10	1020	1205	1054	1058	1	150	153
4	15	1003	1040	1025	1035	1	165	171
4	17	0956	1230	1142	1217	2	153	174
4	19	1103	1304	1157	1245	1	103	132
5	4	0855	1215	0953	1003	2	126	132
5	4	0855	1215	1108	1203	1	171	205
5	10	0833	1156	0945	1015	2	304	323
5	10	0833	1156	1055	1114	3	347	358
5	11	0829	1205	0856	0858	2	65	67
5	11	0829	1205	1023	1125	1	118	156
5	17	0807	1202	1056	1100	1	322	324
5	18	0808	1115	1009	1035	3	84	99
5	22	0747	1145	0907	0916	1	289	294
5	24	0740	1145	1045	1110	2	289	304
5	29	0720	1120	0848	0901	3	251	259
5	31	0712	1110	0921	1007	3	213	240
6	2	0704	1110	1006	1051	2	181	208
6	3	0729	1130	0740	0750	1	243	249
6	3	0729	1130	0912	0943	3	299	318
6	5	0652	1125	0748	0931	1	189	252
6	22	0827	1015	0827	0830	1	254	256
6	27	0520	0950	0854	0918	2	304	318
6	29	0511	1011	0851	0903	3	243	250
7	1	0540	0940	0551	0607	2	76	85
7	1	0540	0940	0747	0822	1	146	167
7	2	0510	0945	0827	0840	2	321	329
7	3	0500	0954	0742	0758	3	84	94
7	3	0500	0954	0914	0925	2	140	147
7	4	0712	0930	0719	0740	1	221	234
7	15	0407	0843	0703	0737	2	69	89
7	19	0350	0830	0544	0607	3	264	278
7	20	0400	0825	0406	0440	2	355	16
7	21	0520	0820	0648	0657	1	244	249
7	26	0330	0800	0511	0542	3	219	237
7	26	0330	0800	0647	0717	2	277	295
8	7	0227	0650	0519	0533	3	231	240
8	12	0156	0635	0341	0445	2	205	244

1961 24.0 TALLAHASSEE

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
5	10	0833	1156	0945	1015	1	304	323
5	10	0833	1156	1055	1114	1	347	358
5	11	0829	1205	0856	0858	2	65	67
5	11	0829	1205	1023	1050	1	118	134
5	17	0807	1202	1023	1132	1	302	343
5	18	0803	1125	1021	1044	2	91	105
5	22	0747	1145	0908	0909	1	289	290
5	24	0740	1145	1055	1058	2	295	297
5	29	0720	1120	0850	0905	1	253	262
5	31	0712	1110	0927	1002	3	216	237
6	2	0704	1110	1018	1059	2	188	213
6	3	0729	1130	0932	0940	3	311	316
6	22	0545	1015	0759	0805	1	237	241
6	22	0545	1015	0827	0832	1	254	257
6	27	0520	0950	0852	0918	1	303	318
7	1	0540	0940	0551	0609	2	76	87
7	2	0510	0945	0836	0847	2	326	333
7	3	0500	0954	0742	0800	3	84	95
7	4	0449	0930	0718	0740	2	220	234
7	15	0428	0843	0722	0736	1	80	89
7	19	0350	0830	0544	0603	2	264	275
7	20	0400	0825	0406	0447	2	355	20
7	26	0330	0800	0503	0531	3	214	231
7	26	0330	0800	0626	0651	2	264	279
8	12	0156	0635	0356	0439	2	214	240

1962 18.0 TALLAHASSEE

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
4	25	1357	1453	1432	1437	2	216	219
4	26	1125	1230					
4	27	1122	1230	1212	1222	2	72	78
4	27	1315	1345	1317	1327	1	111	118
4	28	1119	1230					
4	29	1115	1245					
4	30	1120	1230	1147	1152	3	148	151
4	30	1120	1230	1156	1200	3	154	156
5	1	1109	1230					
5	2	1105	1230					
5	3	1102	1230					
5	4	1059	1230					
5	5	1125	1235					
5	6	1053	1230					
5	7	1049	1230					
5	8	1045	1230					
5	9	1042	1230					
5	10	1035	1200					
5	11	1035	1230	1210	1221	2	17	24
5	12	1045	1310					
5	13	1025	1230					
5	14	1025	1225					
5	15	1020	1230					
5	16	1018	1230					
5	17	1015	1215					
5	18	1011	1235	1147	1235	1	337	6
5	19	1008	1245	1227	1245	1	152	162
5	20	1004	1230					
5	21	1001	1230					
5	22	0958	1225	1048	1054	2	183	187
5	22	0958	1225	1124	1127	2	205	207
5	23	0954	1230					
5	24	0951	1230	1147	1156	3	160	165
5	25	0947	1230					
5	26	0944	1230					
5	27	0940	1230					
5	28	0936	1230					
5	29	0939	1200					
5	30	0925	1200	1055	1103	2	312	316
5	31	0925	1200					

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
6	2	0919	1200					
6	3	0915	1200	1125	1130	1	212	215
6	4	0911	1200					
6	5	0935	1200					
6	6	0904	1200					
6	7	0900	1200					
6	8	0857	1155					
6	9	0853	1215					
6	10	0850	1200					
6	11	0846	1200					
6	12	0840	1155					
6	13	0839	1200					
6	14	0835	1200					
6	15	0831	1155					
6	16	0905	1200					
6	17	0824	1155					
6	18	0840	1200	0910	0945	2	229	250
6	19	0816	1200					
6	21	0815	1200					
6	22	0806	1155					
6	23	0801	1205					
6	24	0757	1200					
6	25	0740	1200	0924	1010	3	211	239
6	26	0750	1200					
6	27	0830	1215					
6	28	0742	1200					
6	29	0735	1200					
7	1	0730	1200					
7	3	0722	1200					
7	4	0718	1200					
7	5	0714	0825					
7	6	0710	1200					
7	7	0706	1200	1059	1104	3	276	279
7	8	0705	1200					
7	9	0659	1155					
7	10	0656	1154					
7	11	0650	1150					
7	12	0646	1140	0807	0820	3	205	213
7	13	0642	1140					
7	14	0638	1138					
7	15	0634	1134					
7	16	0630	1130					

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
7	17	0626	1126	0802	0918	3	235	281
7	18	0622	1120					
7	19	0618	1115					
7	20	0614	1115					
7	21	0625	1110	0759	0836	2	116	138
7	22	0610	1105	0739	0746	2	254	259
7	23	0601	1100	1025	1028	2	145	147
7	24	0610	1110					
7	25	0553	1053					
7	26	0600	1049					
7	27	0545	1045					
7	28	0540	1040					
7	29	0536	1030					
7	30	0532	1030					
7	31	0528	1028					
8	1	0520	1030	0538	0550	3	248	255
8	2	0519	1015					
8	3	0545	1015					
8	4	0705	1010					
8	5	0520	1005					
8	6	0502	1002					
8	7	0500	1000					
8	8	0500	0900					
8	9	0449	0949					
8	10	0445	0945					
8	11	0440	0940					
8	12	0436	0930					
8	13	0430	0930					
8	14	0445	0920					
8	16	0418	0910					
8	17	0415	0815					
8	18	0350	0910	0355	0425	3	227	245
8	18	0350	0910	0505	0520	3	269	278
8	19	0405	0905					
8	20	0410	0901	0540	0558	3	232	243
8	21	0350	0900					
8	22	0400	0852	0652	0809	3	217	263
8	22	0400	0852	0823	0841	2	272	283
8	23	0345	0845	0355	0400	3	260	263
8	24	0355	0830					
8	25	0339	0839					
8	26	0410	0835					
8	27	0335	0830					

1962 16.0 TALLAHASSEE

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
6	18	0840	1132	0853	0945	3	218	250
6	23	0750	1205	0808	0810	2	224	225
6	25	0740	1200	0930	1010	3	215	239
6	28	0725	1200	0758	0807	1	251	256
7	7	0700	1200	1059	1104	3	276	279
7	12	0640	1140	0824	0833	3	215	221
7	17	0625	1125	0802	0918	3	235	281
7	21	0625	1110	0759	0829	2	116	134
8	1	0520	1030	0538	0550	3	248	255
8	13	0430	0930	0442	0447	1	222	225
8	18	0350	0910	0355	0425	3	227	245
8	18	0350	0910	0505	0520	3	269	278
8	20	0410	0915	0541	0558	3	232	243
8	22	0400	0855	0659	0815	3	221	267
8	23	0345	0845	0355	0400	3	260	263

Observations were made each night from June 14 to August 27 with the exception of June 30, July 2, and August 15.

1962 22.0 TALLAHASSEE

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
6	18	0840	1200	0920	0945	2	235	250
6	23	0750	1205	0808	0810	2	224	225
6	25	0740	1200	0924	1011	3	211	239
7	12	0640	1140	0820	0833	3	213	221
7	17	0625	1125	0802	0855	3	235	267
7	21	0625	1110	0759	0814	2	116	125
7	22	0610	1105	0727	0736	2	247	253
8	13	0430	0930	0442	0447	1	222	225
8	18	0350	0910	0355	0425	3	227	245
8	18	0350	0910	0505	0520	3	269	278
8	20	0410	0915	0535	0556	3	229	242
8	22	0400	0855	0651	0806	3	216	261
8	22	0400	0855	0820	0838	2	270	281

Observations were made each night from June 9 to August 27 with the exception of June 30, July 2, and August 15.

1962 26.0 TALLAHASSEE

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
8	18	0350	0910	0355	0425	3	227	245

Observations were made each night from June 9 to June 16, July 26 to August 14, and August 16 to August 27.

1962 38.0 TALLAHASSEE

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
6	18	1035	1200	1149	1150	1	325	325
8	18	0355	0910	0355	0425	1	227	245

Observations were made each night from April 26 to August 27 with the exception of June 1, June 2, June 30, July 2, July 31, August 15, and August 25.

1963 18.0 TALLAHASSEE

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
7	13	0840	1205	1151	1159	1	322	326
7	14	0825	1200					
7	15	0830	1200					
7	16	0810	1200					
7	17	0813	1145					
7	18	0805	1200					
7	20	0805	1200					
7	21	0800	1130					
7	22	0750	1140					
7	23	0745	1200					
7	24	0745	0950					
7	25	0742	1200	0842	0919	3	214	236
7	26	0735	1145					
7	27	0732	1200					
7	28	0730	1145					
7	29	0725	1200	0947	1003	2	135	145
7	30	0720	1145	0805	0930	3	224	276
7	31	0715	1200					
8	1	0725	1200					
8	2	0710	1200					
8	3	0719	1200					
8	4	0655	1200	0701	0813	2	219	262
8	5	0650	1200	0940	0959	2	105	117
8	6	0655	1200	1004	1007	1	270	272
8	7	0645	1200					
8	8	0858	1141	0823	0836	1	151	158
8	8	0858	1141	1120	1141	1	258	270
8	9	0655	1045					
8	10	0635	1200					
8	11	0635	1145	0818	0935	3	239	286
8	11	0635	1145	0955	1033	3	298	321
8	12	0645	1040					
8	13	0630	1005					
8	15	0645	1115					
8	16	0630	1030					
8	17	0625	1145					
8	18	0610	1130					
8	20	0610	1200					
8	21	0550	1145					
8	22	0550	1145					

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
8	23	0545	1145					
8	24	0545	1140					
8	25	0725	1135					
8	26	0530	1115					
8	27	0630	1130					
8	28	0644	1115					
8	29	0520	1125					
8	30	0510	1115	0942	1022	3	272	296
8	31	0515	1113					
9	1	0515	1115					
9	2	0505	1050					
9	3	0510	1100					
9	4	0530	1038					
9	5	0456	1053					
9	6	0500	1000					
9	7	0445	1045					
9	8	0430	1030					
9	9	0435	1040	0707	0809	1	245	283
9	10	0432	1036					
9	11	0425	1030	0654	0700	2	179	182
9	12	0420	1020					
9	13	0415	1115	0606	0715	3	91	133
9	13	0415	1115	0927	1050	3	212	263
9	14	0415	1015					
9	16	0410	1006					
9	17	0549	1005					
9	18	0355	0955					
9	19	0345	0955	0431	0501	3	218	236
9	19	0345	0955	0720	0835	3	320	5
9	20	0335	1010					
9	21	0348	0944	0403	0407	2	142	144
9	22	0340	0940	0340	0350	2	279	285
9	23	0325	0900					
9	24	0245	0445					
9	25	0240	1025					
9	26	0236	0816					
9	27	0230	1015					
9	28	0225	1010	0648	0710	1	217	230
9	28	0225	1010	0841	0856	1	285	294
9	29	0850	1005					
9	30	0232	0635					

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
10	1	0225	1000					
10	2	0210	0955					
10	3	0205	0940					
10	4	0200	0945	0842	0853	2	109	116
10	5	0155	0940					
10	6	0156	0350					
10	7	0200	0930					
10	8	0309	0930	0504	0512	2	220	225
10	9	0140	0925					
10	10	0125	0920					
10	11	0130	0915					
10	12	0125	0910					
10	13	0120	0939					
10	15	0113	0900					
10	16	0110	0540					
10	17	0105	0624					
10	18	0125	0845					
10	19	0055	0840					
10	20	0050	0835					
10	21	0045	0830					
10	22	0055	0830					
10	23	0040	0825					
10	24	0035	0820					
10	25	0045	0852	0222	0310	1	164	193
10	26	0030	0810					
10	27	0030	0805					
10	28	0100	0800	0435	0450	2	336	345
10	29	0010	0755					
10	30	0255	0755					
10	31	2355	0750					
11	1	0000	0540					
11	1	0607	0655					
11	2	0005	0045	0005	0045	2	206	230
11	2	0237	0345					
11	3	0151	0810					
11	4	2345	0730					
11	5	2340	0725					
11	6	2350	0725					
11	7	2330	0720	0227	0250	2	325	339
11	7	2330	0720	0532	0541	2	76	82
11	8	2330	0715					
11	9	2325	0710					

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
11	10	2330	0705					
11	11	2320	0700					
11	12	2310	0655					
11	13	2320	0224					
11	13	0625	0655					
11	14	0420	0705					
11	15	2300	0645					
11	16	2255	0640					
11	17	2250	0635					
11	18	2330	0630					
11	19	2300	0525					
11	20	2245	0320					
11	21	2255	0620					
11	22	2240	0555	2300	0010	2	298	340
11	23	2330	0605	0335	0417	3	254	280
11	24	2225	0600					
11	25	2325	0600					

1963 16.0 TALLAHASSEE

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
7	25	0742	1200	0852	0910	1	220	231
7	29	0725	1200	0947	0955	2	135	140
7	30	0720	1145	0902	0912	1	259	265
8	4	0655	1147	0703	0809	1	220	260
8	5	0650	1200	0940	0959	1	105	117
8	8	0858	1141	0823	0834	1	151	157
8	8	0858	1141	1123	1141	1	259	270
8	11	0635	1145	0855	0930	3	262	283
8	11	0635	1145	0955	1035	3	298	322
8	30	0510	1115	0946	1025	3	275	298
9	9	0435	1040	0738	0808	1	264	282
9	13	0415	1115	0606	0715	3	91	133
9	13	0415	1115	0917	1030	3	206	250
9	19	0345	0955	0431	0452	2	218	230
9	19	0345	0955	0736	0802	2	329	345
9	19	0345	0955	0834	0845	3	4	11
10	25	0045	0852	0222	0312	1	164	194
10	28	0100	0800	0433	0450	2	335	345
11	2	0005	0045	0005	0045	2	206	230
11	7	2330	0720	0231	0252	2	327	340
11	22	2240	0555	2300	0000	2	298	334
11	23	2330	0605	0340	0420	3	258	282

No observations were made August 14 and 19, September 15 and 30, and October 9.

1963 22.0 TALLAHASSEE

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
7	25	0742	1020	0843	0917	3	214	235
7	30	0720	1145	0902	0906	1	259	261
8	4	0654	1200	0654	0815	2	214	263
8	5	0650	1200	0940	0957	3	105	116
8	8	0858	1141	0820	0837	1	149	159
8	8	0858	1141	1100	1141	1	245	270
8	11	0635	1145	0819	0920	3	240	277
8	11	0635	1145	0955	1032	2	298	320
8	23	0545	1145	0837	0847	1	258	264
8	30	0510	1115	0941	1012	2	272	290
9	9	0435	1040	0722	0753	1	254	273
9	13	0415	1115	0608	0722	3	92	137
9	13	0415	1115	0931	1030	3	215	250
9	19	0345	0955	0725	0757	2	323	342
10	8	0309	0930	0504	0512	2	220	225
10	25	0045	0852	0222	0310	1	164	193
11	2	0005	0045	0005	0045	2	206	230
11	22	2240	0555	2300	0010	2	298	340
11	23	2330	0605	0332	0345	3	253	261

No observations were made August 14 and 19, September 15, 24, and 29, October 14, and November 25, 26, 27, and 28.

1963 26.0 TALLAHASSEE

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
7	25	0742	1200	0857	0909	1	223	230
8	4	0655	1200	0658	0813	2	217	262
8	5	0650	1200	0940	0952	3	105	113
8	8	0858	1141	0821	0837	1	149	159
8	8	0858	1141	1105	1141	1	248	270
8	11	0635	1145	0819	0908	2	240	270
8	11	0635	1145	0955	1032	1	298	320
9	9	0435	1040	0738	0753	1	264	273
9	13	0415	1115	0624	0726	3	102	139
9	13	0415	1115	0931	1030	3	215	250
10	8	0309	0930	0504	0512	2	220	225
11	2	0005	0045	0005	0045	2	206	230
11	22	2230	0555	2320	2354	1	310	331
11	23	2330	0605	0330	0410	2	251	276

No observations were made August 14, August 19, and September 15.

1963 18.0 ST. OSYTH

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
8	19	0218	0622	0450	0459	2	239	244
8	20	2318	0630	0301	0310	2	323	329
9	4	2316	0516	0154	0202	1	23	27
9	21	2205	0405	1144	1145	1	61	61
10	5	2107	0302	2224	2244	1	246	259
10	5	2107	0302	2255	2300	1	265	269
10	24	2000	0128	2137	2138	1	201	201

1963 18.0 GRAHAMSTOWN

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
7	17	2330	0430	0203	0421	3	208	292
7	20	2315	0400	0105	0237	2	265	320
7	24	2300	0400	0004	0019	2	110	119
7	24	2300	0400	0113	0205	3	152	183
7	24	2300	0400	0230	0258	3	198	215
7	25	2300	0400	0155	0219	3	328	342
7	27	2300	0400	0147	0222	2	264	285
7	27	2300	0400	0340	0352	1	332	340
7	30	0100	0400	0121	0156	3	340	1
7	31	2245	0400	0045	0250	3	109	185
8	1	2230	0400	0104	0146	2	271	296
8	3	2230	0330	0125	0206	2	225	250
8	6	2215	0400	0155	0251	3	335	9
8	7	2215	0400	0225	0321	3	144	177
8	8	2215	0330	0045	0155	2	234	276
8	9	2130	0400	2130	2155	1	266	282
8	10	2130	0400	0209	0255	2	226	254
8	10	2130	0400	0328	0344	2	273	283
8	11	2130	0300	0217	0228	2	21	28
8	15	0200	0400	0226	0317	2	269	300
8	17	2130	0400	0221	0303	2	207	233
8	18	2130	0400	2239	2313	1	224	245
8	18	2130	0400	0049	0118	3	302	320
8	20	2130	0400	0106	0114	2	254	259
8	20	2130	0400	0209	0245	1	292	314
8	22	2115	0400	0048	0247	3	184	256
9	4	2030	0100	2305	2355	2	280	310
9	6	2015	0400	2339	0056	3	242	289
9	8	2000	0400	2222	2308	2	137	165
9	8	2000	0400	0305	0320	3	308	317
9	9	2000	0400	2241	2316	2	299	325
9	11	1945	0345	2328	0006	3	269	292
9	15	1930	0400	2310	2350	2	141	165
9	15	1930	0400	0317	0400	3	290	316
9	22	1900	0300	0035	0050	2	167	176
9	22	1900	0300	0145	0205	2	209	221
9	23	2200	0000	2226	2337	2	239	282
9	24	1900	0245	0202	0221	1	161	172
9	27	1845	0245	0134	0245	3	236	279
10	1	2100	0245	0145	0208	3	125	139

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
10	7	2000	0230	0023	0039	2	260	270
10	7	2000	0230	0202	0221	3	320	331
10	16	2000	0115	2230	2344	3	107	115
10	24	2000	0100	2350	0055	3	281	320
10	26	1900	0100	0020	0100	3	241	265
11	8	2100	2345	2325	2337	3	5	12
11	12	2000	2330	2248	2326	3	225	248
11	15	2000	2315	2134	2250	3	272	316
11	16	2100	2315	2121	2313	3	55	122
11	20	2100	2300	2141	2211	2	309	327
11	24	2000	2300	2015	2102	3	139	167

No observations were made July 21 and 22, August 2, 4, 14, 21, 24, 29, and 31, September 1, 5, 12, 13, 14, 20, 28, 29, and 30, October 2, 3, 4, 5, 6, 9, 10, 11, 13, 14, 15, 17, 19, 21, 23, 25, 27, 28, 29, and 30, and November 1, 2, 3, 4, 9, 10, 11, 17, 18, 19, 21, 22, and 23.

1964 18.0 TALLAHASSEE

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
7	22	0955	1200					
7	23	1005	1225					
7	24	0955	1225					
7	.25	0945	1230					
7	26	0945	1230					
7	27	0940	1220					
7	29	0935	1230					
7	30	0930	1230					
7	31	0915	1200					
8	1	0925	1200					
8	2	0915	1200					
8	3	0910	1200					
8	4	0910	1200					
8	5	0910	1200					
8	6	0920	1200					
8	7	0905	1200					
8	8	0855	1200					
8	9	0905	1200					
8	10	0920	1200					
8	12	0910	1200					
8	13	0910	1200					
8	14	0920	1200					
8	18	0925	1200					
8	20	0925	1200	1042	1055	1	223	231
8	24	0835	1205					
8	25	0840	1130					
8	26	0845	1200					
8	27	1010	1200					
8	28	0835	1200	0925	0935	2	301	307
8	28	0835	1200	0947	0955	1	314	319
8	29	0810	1200					
8	30	0835	1200					
8	31	0815	1200					
9	1	0835	1200					
9	2	0800	1150					
9	3	0755	1200					
9	4	1035	1200					
9	5	0755	1135					
9	6	0740	1200					
9	7	0740	1200					

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
10	20	0435	0945					
10	21	0440	0945					
10	22	0425	0935					
10	23	0420	0930					
10	24	0430	0925					
10	25	0415	0920					
10	26	0405	0915					
10	27	0405	0910					
10	28	0345	0905					
10	29	0355	0615					
10	30	0335	0955					
10	31	0330	0850					
11	1	0400	0845	0602	0615	3	249	257
11	2	0345	0845					
11	3	0350	0840					
11	4	0350	0835					
11	5	0330	0830					
11	6	0325	0825					
11	7	0325	0820					
11	8	0335	0815					
11	9	0315	0815					
11	10	0320	0810					
11	11	0305	0805					
11	12	0300	0805					
11	13	0255	0755					
11	14	0250	0745					
11	15	0305	0745					
11	16	0240	0740					
11	17	0240	0735					
11	18	0235	0730	0235	0250	2	166	175
11	19	0320	0635					
11	20	0230	0725					
11	21	0225	0720					
11	22	0215	0545					
11	23	0210	0710					
11	24	0205	0705					
11	25	0415	0700					
11	26	0200	0655					
11	27	0240	0650					
11	28	0155	0650					
11	29	0210	0640					
11	30	0130	0640					

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
12	1	0220	0635					
12	2	0130	0630					
12	3	0130	0625					
12	6	0115	0600					
12	7	0215	0610					
12	8	0133	0605	0213	0229	1	285	295
12	9	0100	0400					
12	10	0055	0555	0320	0325	2	267	270
12	11	0055	0550					
12	12	0045	0545					
12	13	0040	0540					
12	14	0040	0540					
12	15	0035	0535					
12	16	0030	0530					
12	17	0050	0525					
12	18	0020	0440					
12	19	0040	0515					
12	20	0010	0415					
12	21	0010	0510					
12	22	0105	0505	0145	0205	1	216	228
12	23	0005	0445					
12	25	0025	0450					
12	28	0030	0430					
12	29	0000	0435					
12	30	0000	0420					
12	31	0000	0425					

1964 16.0 TALLAHASSEE

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
8	20	0925	1200	1037	1055	2	220	231
8	28	0835	1115	0927	0937	3	302	308
9	18	0710	1107	0932	0955	1	227	241
9	21	0635	1105	0830	0840	1	282	288
9	21	0635	1105	0908	0948	2	304	329
9	21	0635	1105	1007	1020	1	340	348
9	23	0630	1130	1117	1126	2	324	329
9	30	0600	1100	1005	1015	2	255	261
10	1	0603	1055	0617	0624	2	267	272
10	1	0603	1055	0655	0703	2	290	295
10	8	0545	1035	0710	0714	1	274	276
11	1	0400	0845	0602	0615	3	249	257
11	7	0730	0820	0744	0746	1	135	136
11	18	0235	0730	0235	0250	2	166	175
12	8	0133	0605	0213	0229	1	285	295
12	10	0055	0555	0320	0331	3	267	273
1	10	0005	0345	0223	0236	3	219	226

No observations were made on December 24, 26, and 27, 1964, and January 1 and 3, 1965.

1964 22.0 TALLAHASSEE

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
8	20	0925	1200	1037	1050	1	220	228
9	21	0635	1140	0830	0840	1	282	288
9	21	0635	1140	0910	0932	1	306	319
9	22	0635	1140	1045	1125	2	154	178
9	23	0630	1130	1107	1116	2	318	323
9	30	0600	1100	1005	1015	2	255	261
10	8	0545	1035	0650	0700	1	262	268
10	10	0520	1025	0554	0600	1	169	173

No observations were made on December 3 - 24, 26, and 27, 1964, and January 1 and 3, 1965.

1964 26.0 TALLAHASSEE

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
9	30	0600	1100	1005	1015	1	255	261
10	8	0545	1035	0650	0700	1	262	268
10	10	0520	1025	0554	0608	2	169	178
11	18	0235	0730	0235	0250	1	166	175
12	8	0105	0605	0215	0230	1	286	295

No observations were made on November 27, 28, 29, and 30, 1964, December 1, 2, 24, 26, and 27, 1964, and January 1 and 3, 1965.

1964 18.0 **COMBINED DATA**

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
8	1	0400	0700					
8	2	0355	0700	0521	0642	2	199	248
8	3	0345	0700					
8	4	0345	0700	0522	0657	2	141	199
8	5	0340	0700					
8	6	0340	0700					
8	7	0335	0700	0541	0642	2	244	281
8	8	0330	0700					
8	9	0325	0700					
8	10	0320	0700					
8	11	0320	0700	0535	0620	2	123	150
8	12	0315	0700	0453	0534	2	248	272
8	13	0315	0700					
8	14	0310	0700					
8	15	0310	0700					
8	16	0310	0700					
8	17	0305	0700	0402	0435	2	249	269
8	18	0300	0700					
8	19	0255	0700					
8	20	0250	0700					
8	21	0245	0700					
8	22	0245	0700					
8	23	0240	0700					
8	24	0235	0700	0420	0440	2	234	246
8	25	0230	0700					
8	26	0225	0700					
8	27	0225	0700					
8	28	0220	0700	0503	0548	2	142	169
8	29	0215	0700					
8	30	0210	0700					
8	31	0210	0700					
9	1	0205	0700					
9	2	0205	0700					
9	3	0200	0700					
9	4	0155	0700					
9	5	0120	0700	0120	0205	2	132	159
9	6	0150	0700					
9	7	0145	0655					
9	8	0140	0650					
9	9	0135	0645					
9	10	0130	0640					

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
9	11	0130	0640					
9	12	0125	0635					
9	13	0120	0630					
9	14	0115	0625					
9	15	0110	0620					
9	16	0110	0620					
9	17	0105	0615					
9	18	0100	0610					
9	19	0055	0605					
9	20	0050	0600					
9	21	0050	0600					
9	22	0045	0600					
9	23	0040	0550					
9	24	0035	0545					
9	25	0030	0540					
9	26	0030	0540					
9	27	0025	0535					
9	28	0020	0525	0310	0354	2	63	89
9	29	0015	0515					
9	30	0010	0510					
10	1	0010	0510					
10	2	0005	0510	0315	0326	1	308	315
10	3	0000	0505	0304	0353	3	92	122
10	4	2355	0500					
10	5	2350	0500	0054	0151	3	315	349
10	6	2350	0455					
10	7	2345	0450					
10	8	2340	0440					
10	9	2335	0430					
10	10	2330	0420					
10	11	2330	0415					
10	12	2325	0415					
10	13	2320	0410					
10	14	2315	0410					
10	15	2310	0410					
10	16	2310	0405					
10	17	2305	0405					
10	18	2300	0400					
10	19	2255	0400					
10	20	2240	0350					
10	21	2240	0350					
10	22	2235	0345					

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
10	23	2230	0340					
10	24	2225	0335	2308	0100	2	233	301
10	25	2220	0330					
10	26	2220	0330					
10	27	2215	0325					
10	28	2210	0320					
10	29	2205	0315					
10	30	2200	0310					
10	31	2200	0310					
11	1	2200	0305					
11	2	2150	0300					
11	3	2140	0250					
11	4	2135	0245	2318	2346	2	97	114
11	5	2130	0240					
11	6	2130	0240					
11	7	2125	0235					
11	8	2120	0230					
11	9	2115	0225					
11	10	2110	0220	0032	0130	2	326	1
11	11	2110	0220	0056	0156	3	131	167
11	12	2105	0215					
11	13	2100	0210	2200	2357	2	326	37
11	14	2100	0205					
11	15	2100	0200					
11	16	2100	0200					
11	17	2100	0140					
11	18	2100	0135					
11	19	2100	0130					
11	20	2100	0130					
11	21	2100	0130					
11	22	2100	0125	2312	0034	3	285	335
11	23	2100	0120					
11	24	2100	0115					
11	25	2100	0100					
11	26	2100	0100					
11	27	2100	0100					
11	28	2100	0055					
11	29	2100	0050					
11	30	2100	0050					
12	1	2100	0050					
12	2	2100	0045					
12	3	2100	0040					

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
12	4	2100	0035					
12	5	2100	0030					
12	6	2100	0030					
12	7	2100	0025					
12	9	2100	0020					
12	10	2100	0010					
12	11	2100	0010					
12	12	2100	0005					
12	13	2100	0005	2100	2129	3	129	146
12	14	2100	0000					
12	15	2100	0000					

1964 18.0 ST. OSYTH

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
8	5	0445	0700	0445	0451	1	269	273
8	7	0255	0630	0305	0316	2	150	156
8	12	0340	0645	0453	0525	3	248	267
8	12	0340	0645	0550	0600	3	282	288
8	22	0012	0555	0012	0149	3	143	202
8	22	0012	0555	0337	0452	3	267	312
9	5	2300	0700	0120	0205	1	132	159
9	11	2205	0600	2220	0031	1	207	286
9	14	0130	0645	0220	0243	1	84	98
9	14	0130	0645	0432	0443	1	163	170
9	15	0017	0610	0135	0203	2	207	224
9	20	2140	0100	2335	2345	2	167	173
9	21	2255	0545	0035	0048	1	354	2
9	24	2100	0600	2332	0230	2	48	156
10	1	2115	0615	2315	2343	1	12	29
10	1	2115	0615	0217	0233	1	122	132
10	2	2230	0700	0315	0325	1	308	314
10	2	2230	0700	0337	0420	2	321	347
10	5	2200	0700	0054	0151	3	315	349
10	12	2100	0700	0035	0045	2	278	284
10	17	2215	0700	0020	0145	3	302	354
10	17	2215	0700	0152	0208	3	358	8
10	17	2215	0700	0220	0235	2	15	24
10	17	2215	0700	0255	0300	1	36	39
10	24	2223	0700	2310	2340	2	234	274
10	24	2223	0700	0020	0100	3	277	301
10	27	1850	0400	1853	1933	2	171	195
11	2	2300	0600	0200	0240	3	254	278
11	7	2135	0635	2311	2324	1	185	183
11	9	1945	0645	0322	0345	3	278	292
11	16	1915	0700	0210	0318	3	209	250
11	16	1915	0700	0335	0345	2	261	267
11	19	2325	0700	0120	0258	3	271	330
11	22	2005	0605	2312	0005	3	285	318
11	23	1800	0700	0315	0450	2	223	281
11	25	1845	0315	2107	2113	3	302	96
11	26	1845	0305	0007	0013	3	201	205
12	3	1800	0345	2130	2205	2	81	253
12	3	1800	0345	2245	2330	2	126	153
12	12	1845	0300	1945	2105	3	293	132

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
12	13	1800	0300	2115	2129	3	138	297
12	15	1845	0345	2055	2340	3	67	167
12	25	1800	0020	2050	2240	3	129	196
12	25	1800	0020	2320	2333	3	220	228
12	30	1800	2250	1912	1922	3	103	109
12	30	1800	2250	1940	2000	3	120	132
12	30	1800	2250	2030	2038	2	150	155
12	30	1800	2250	2110	2207	2	174	208

No observations were made August 13, 16, and 26, September 10, 19, and 29, October 3, 4, 9, 10, 15, 18, 21, 28, and 29, November 1, 3, and 4.

1964 18.0 GRAHAMSTOWN

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
8	1	0000	0430	0217	0427	3	298	16
8	5	0000	0430	0202	0227	3	171	186
8	10	2300	0430	0257	0312	2	236	245
8	22	2300	0430	2339	0151	3	123	203
8	22	2300	0430	0329	0421	3	262	294
8	26	2230	0400	2317	2348	3	352	11
9	3	2200	0400	0018	0045	2	153	170
10	5	2000	0400	0055	0150	3	315	349
10	8	1930	0400	0310	0332	3	129	142
10	14	2000	0300	0118	0137	2	245	257
10	14	2000	0300	0238	0257	2	294	305
10	15	2000	0300	2233	0008	3	296	354
10	19	2200	0330	0024	0244	3	246	331
10	22	2000	0300	2008	2041	2	183	203
10	24	2100	0300	2305	2335	3	231	250
10	24	2100	0300	0023	0057	3	279	299
11	4	2200	0300	2319	2346	3	97	113
11	5	2000	0230	0105	0201	3	312	346
11	10	2000	0230	2210	2234	3	240	255
11	10	2000	0230	0032	0113	3	326	351
11	11	2000	0230	2048	2106	2	341	352
11	11	2000	0230	2341	0156	3	85	167
11	13	2000	0230	2201	2357	2	326	337
11	17	2000	0230	0131	0208	2	336	359
11	18	2000	0230	0032	0230	2	91	163
11	22	2100	0230	2325	0034	3	293	335
11	24	2000	0200	2049	2126	3	140	163
11	24	2000	0200	2220	0013	2	195	264
11	30	2130	0100	2202	2309	1	8	48

No observations were made August 2, 4, 8, 12, 13, 14, 17, 19, 20, 25, 27, and 30, September 4 - 13, 15, 16, and 17, October 3, 7, 16, 17, 18, 23, 27, 30, and 31, November 1, 2, 6, 7, 21, 25, 27, 28, and 29.

1964 18.0 VALENCIA

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
7	15	0705	0820	0726	0727	1	86	87
7	21	0615	0800	0705	0706	1	257	257
7	22	0630	0800	0651	0652	1	39	39
7	23	0608	0807	0636	0637	1	180	181
7	24	0630	0834	0732	0745	2	4	12
7	24	0630	0834	0757	0758	1	19	20
7	24	0630	0834	0823	0825	2	35	36
7	25	0600	0804	0720	0721	1	148	148
7	25	0600	0804	0750	0751	1	166	166
7	26	0541	0807	0643	0713	2	276	294
7	27	0536	0800	0723	0727	1	90	93
7	28	0529	0830	0655	0725	1	224	242
7	28	0529	0830	0824	0825	1	278	278
7	30	0510	0800	0540	0555	1	120	129
7	31	0519	0750	0540	0559	1	270	282
7	31	0519	0750	0617	0735	1	292	340
8	2	0530	0700	0552	0603	2	218	225
8	2	0530	0700	0610	0642	2	229	248
8	3	0400	0705	0605	0628	2	17	30
8	4	0400	0700	0551	0600	1	159	164
8	6	0340	0700	0609	0615	2	110	114
8	7	0330	0700	0541	0543	1	244	245
8	8	0352	0700	0550	0606	1	40	50
8	11	0320	0700	0535	0620	2	123	150
8	14	0320	0700	0637	0652	1	252	261
8	16	0310	0700	0615	0624	1	179	185
8	17	0310	0700	0402	0405	1	249	251
8	17	0310	0700	0418	0426	2	259	264
8	17	0310	0700	0430	0435	2	266	269
8	17	0310	0700	0532	0541	3	304	309
8	17	0310	0700	0549	0606	2	314	324
8	24	0250	0700	0428	0440	1	239	246
8	24	0250	0700	0452	0504	1	253	261
8	26	0230	0700	0532	0558	1	219	234
8	28	0225	0700	0405	0406	1	107	108
8	28	0225	0700	0503	0507	2	142	145
9	7	0130	0645	0528	0532	1	223	225
9	28	0030	0540	0310	0327	1	63	73
10	2	0010	0510	0318	0326	1	310	315

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
10	3	0000	0510	0304	0346	2	92	117
10	3	0000	0510	0346	0353	3	117	122
10	5	2355	0500	0055	0120	2	315	331
10	5	2355	0500	0126	0135	3	334	340
10	5	2355	0500	0140	0147	1	343	347
10	24	2225	0335	0023	0036	2	279	287
10	24	2225	0335	0044	0100	1	291	301
11	4	2135	0245	2328	2345	1	103	114
11	11	2115	0215	0056	0059	2	131	133
11	22	2100	0123	2353	0005	1	310	318

No observations made August 5 and 12, September 30, and October 4 and 20.

1964 18.0 IBADAN

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
7	19	0450	0700	0522	0538	2	253	263
7	21	0430	0700	0648	0658	2	246	252
7	23	0430	0700	0648	0654	1	187	191
7	24	0430	0700	0540	0550	2	297	303
7	30	0400	0700	0402	0428	3	60	76
7	31	0400	0700	0454	0516	2	242	255
8	2	0400	0700	0446	0457	1	178	185
8	3	0400	0700	0622	0632	2	27	33
8	4	0400	0700	0646	0657	2	192	199
8	5	0340	0700	0636	0645	1	336	342
8	7	0340	0700	0629	0642	3	273	281
8	8	0345	0700	0525	0605	3	25	49
8	10	0320	0700	0602	0627	2	348	3
8	12	0320	0700	0455	0502	1	249	253
8	17	0310	0700	0404	0409	1	251	254
8	17	0310	0700	0425	0430	2	263	266
8	19	0310	0700	0543	0552	1	252	257
8	21	0250	0700	0522	0526	2	180	182
8	22	0250	0700	0612	0621	2	1	6
8	24	0250	0700	0420	0430	2	234	240
8	24	0250	0700	0444	0511	2	249	265
8	29	0230	0700	0519	0548	2	302	320
9	5	0150	0700	0152	0201	3	151	157
9	6	0150	0700	0508	0516	2	60	65
9	10	0130	0640	0405	0409	3	265	267
9	10	0130	0640	0436	0445	2	283	289
9	12	0130	0640	0538	0544	1	262	266
9	23	0050	0600	0102	0111	1	312	317
9	23	0050	0600	0528	0536	2	113	118
9	27	0030	0540	0505	0515	2	341	347
9	28	0030	0540	0347	0354	2	85	89
10	3	0010	0510	0334	0337	2	110	112
10	3	0010	0510	0347	0352	1	118	121
10	5	2350	0500	0105	0116	2	321	328
10	21	2250	0350	2343	2345	1	162	164
10	23	2240	0350	0128	0141	2	167	175
10	26	2220	0330	0041	0045	1	231	233
10	29	2220	0330	0042	0200	2	324	11
11	8	2130	0240	0032	0038	1	24	28

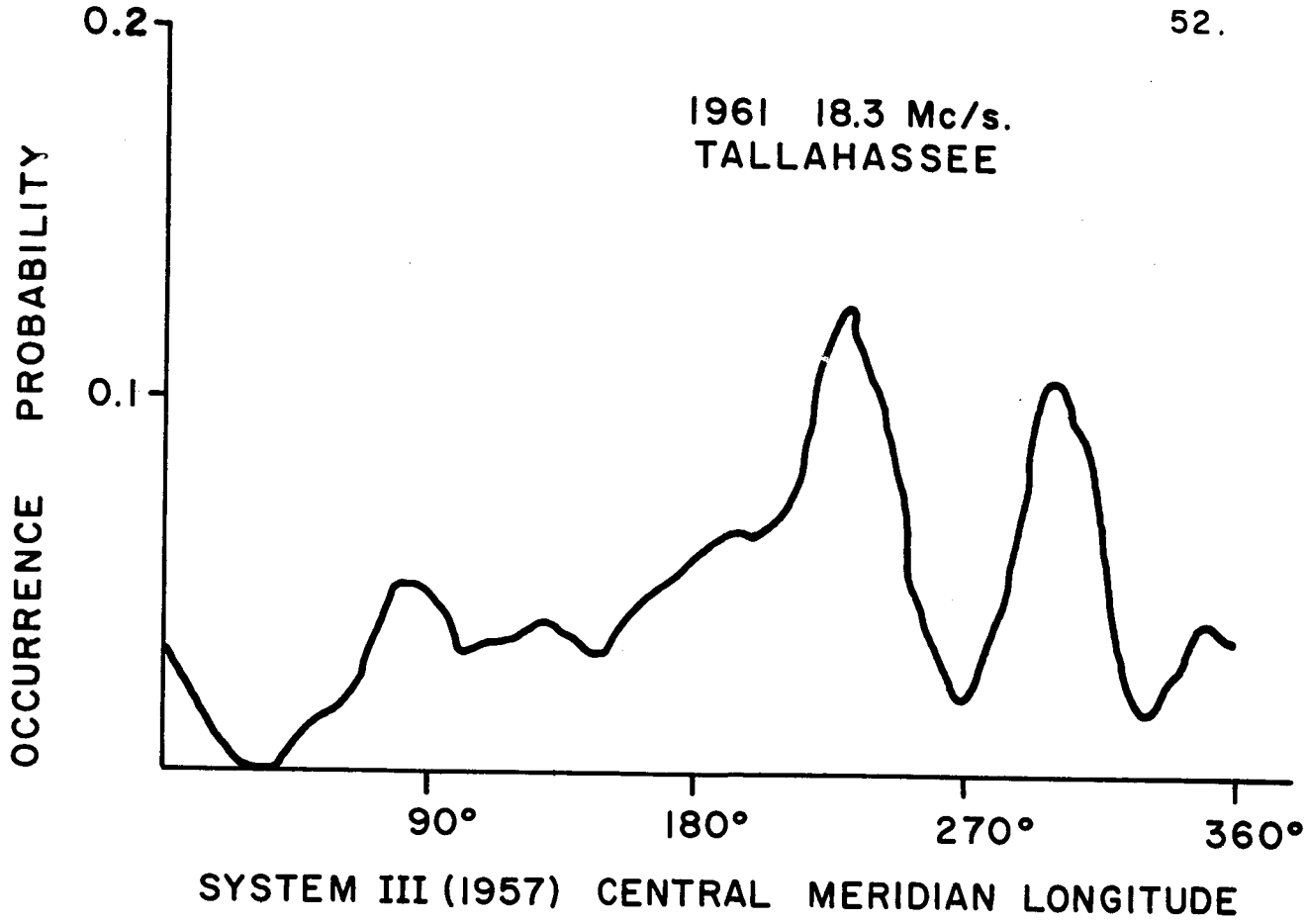
DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
11	13	2110	0220	2200	2204	1	326	329
11	17	2100	0100	2103	2112	1	174	180
11	18	2100	0100	2309	2313	1	41	44
12	10	2100	0010	2111	2116	1	44	47

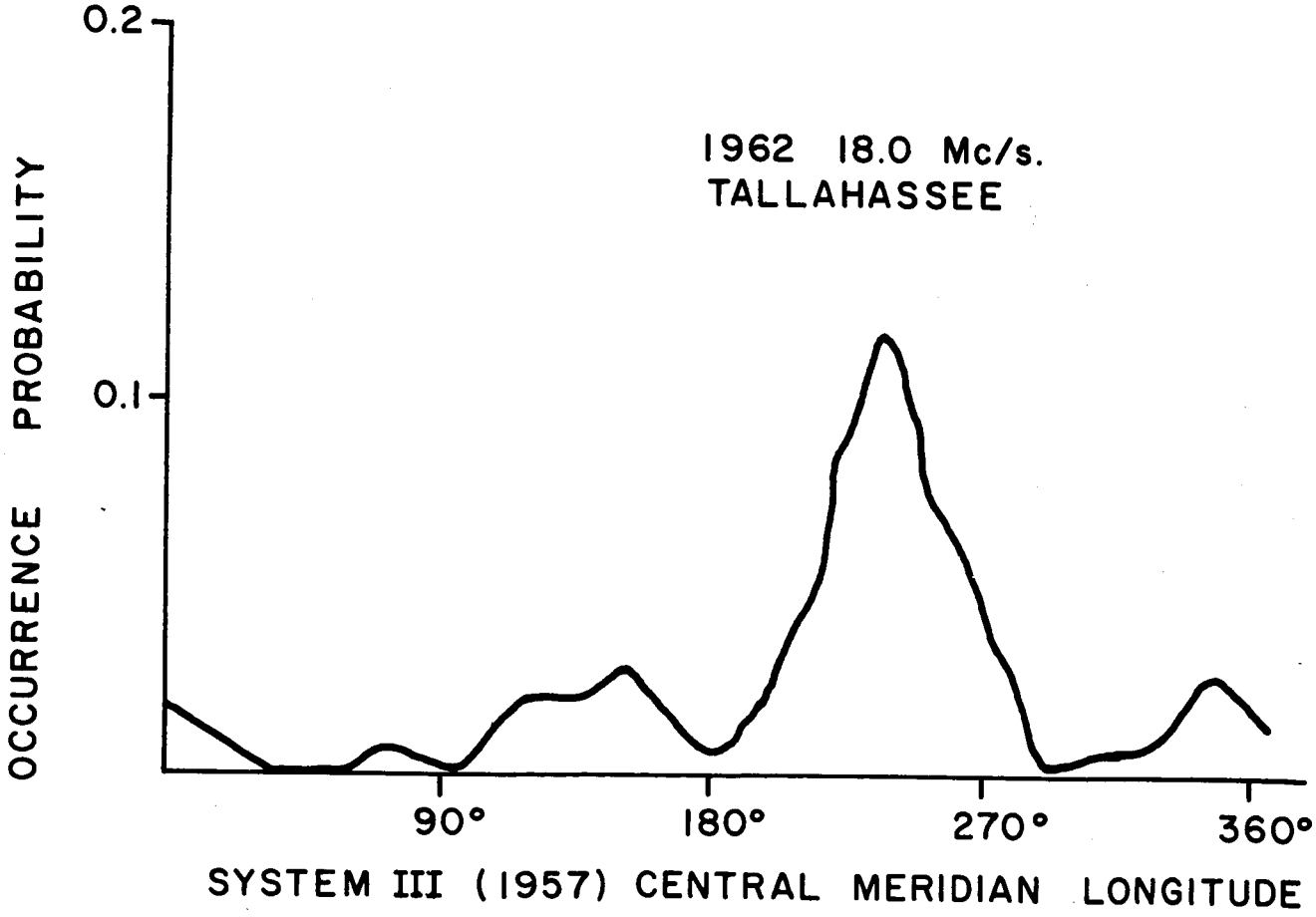
No observations made October 6, November 20 - 24, and December 14 and 15.

1964 18.0 TRONDHEIM

DATE		OBSERVATION PERIOD BEGIN	OBSERVATION PERIOD END	ACTIVITY PERIOD BEGIN	ACTIVITY PERIOD END	ID NO	SYSTEM III LONGITUDE BEGIN	SYSTEM III LONGITUDE END
8	2	0400	0700	0521	0546	2	199	215
8	11	0320	0700	0558	0602	1	136	139
8	12	0320	0700	0500	0534	1	252	272
8	15	0310	0700	0527	0542	2	360	9
8	16	0310	0700	0428	0440	1	115	122
8	18	0310	0700	0410	0425	2	45	54
8	24	0250	0700	0435	0440	1	243	246
8	24	0250	0700	0454	0513	3	255	266
8	29	0230	0700	0435	0448	1	276	284
9	4	0210	0700	0623	0646	2	165	179
9	13	0130	0640	0455	0509	2	27	35
9	26	0030	0540	0431	0448	1	170	181
9	27	0030	0540	0034	0038	1	178	180
9	27	0030	0540	0054	0058	1	190	192
10	3	0010	0510	0348	0352	3	119	121
10	5	2350	0500	0059	0132	3	318	338
10	5	2350	0500	0148	0151	3	347	349
10	5	2350	0500	0350	0410	1	61	73
10	24	2240	0350	2308	2318	3	233	239
10	24	2240	0350	0018	0048	3	276	294
11	10	2110	0220	0112	0130	1	350	1
11	22	2100	0130	2113	2117	2	213	215
12	9	2100	0030	2227	2229	2	299	301
12	13	2100	0010	2100	2107	2	129	133

No observations were made August 3 and October 30.


0.2
0.1
OCCURRENCE PROBABILITY
1961 18.3 Mc/s.
TALLAHASSEE
90°
180°
270°
360°
SYSTEM III (1957) CENTRAL MERIDIAN LONGITUDE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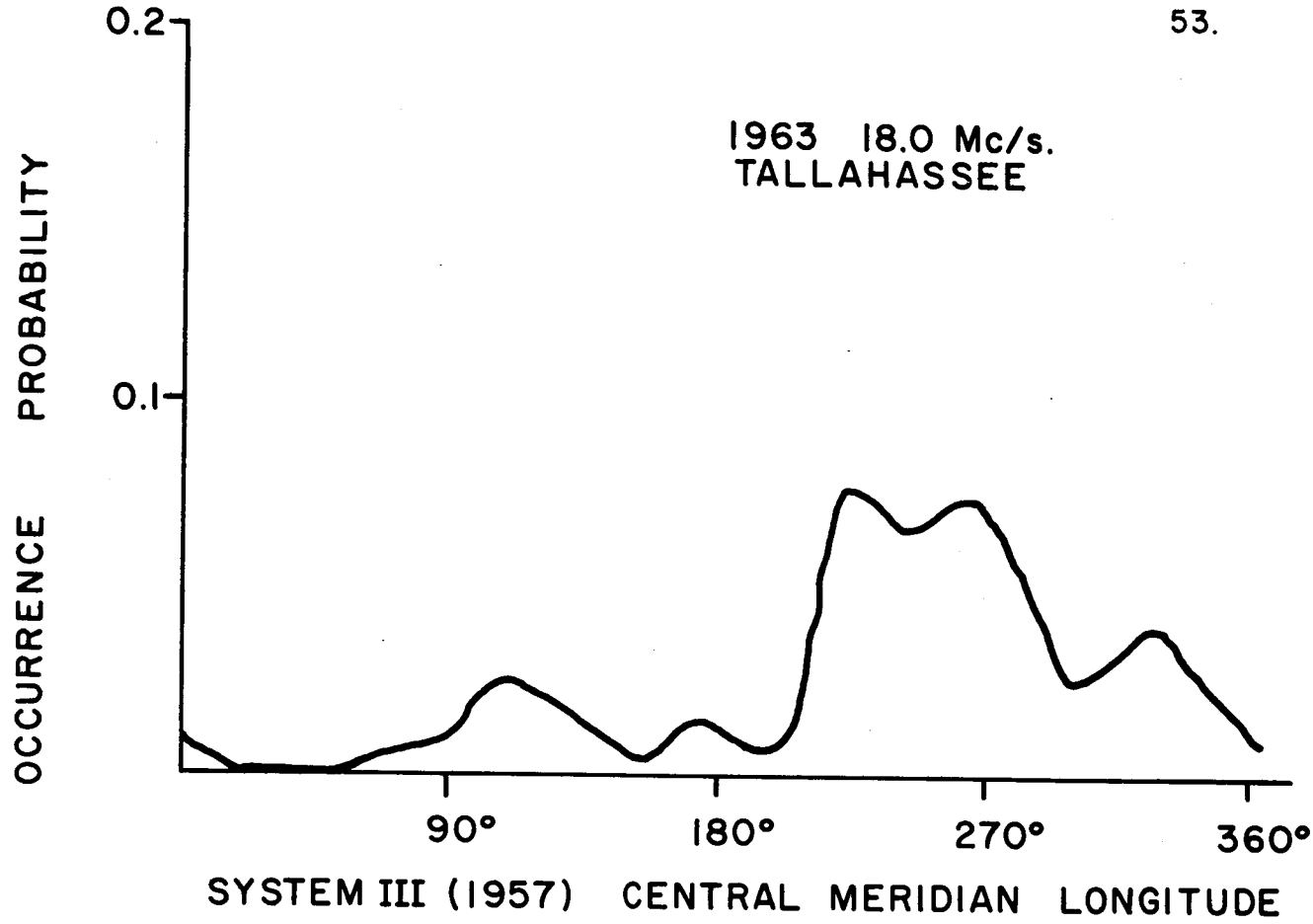
OCCURRENCE PROBABILITY
1962 18.0 Mc/s.
TALLAHASSEE
90°
180°
270°
360°
SYSTEM III (1957) CENTRAL MERIDIAN LONGITUDE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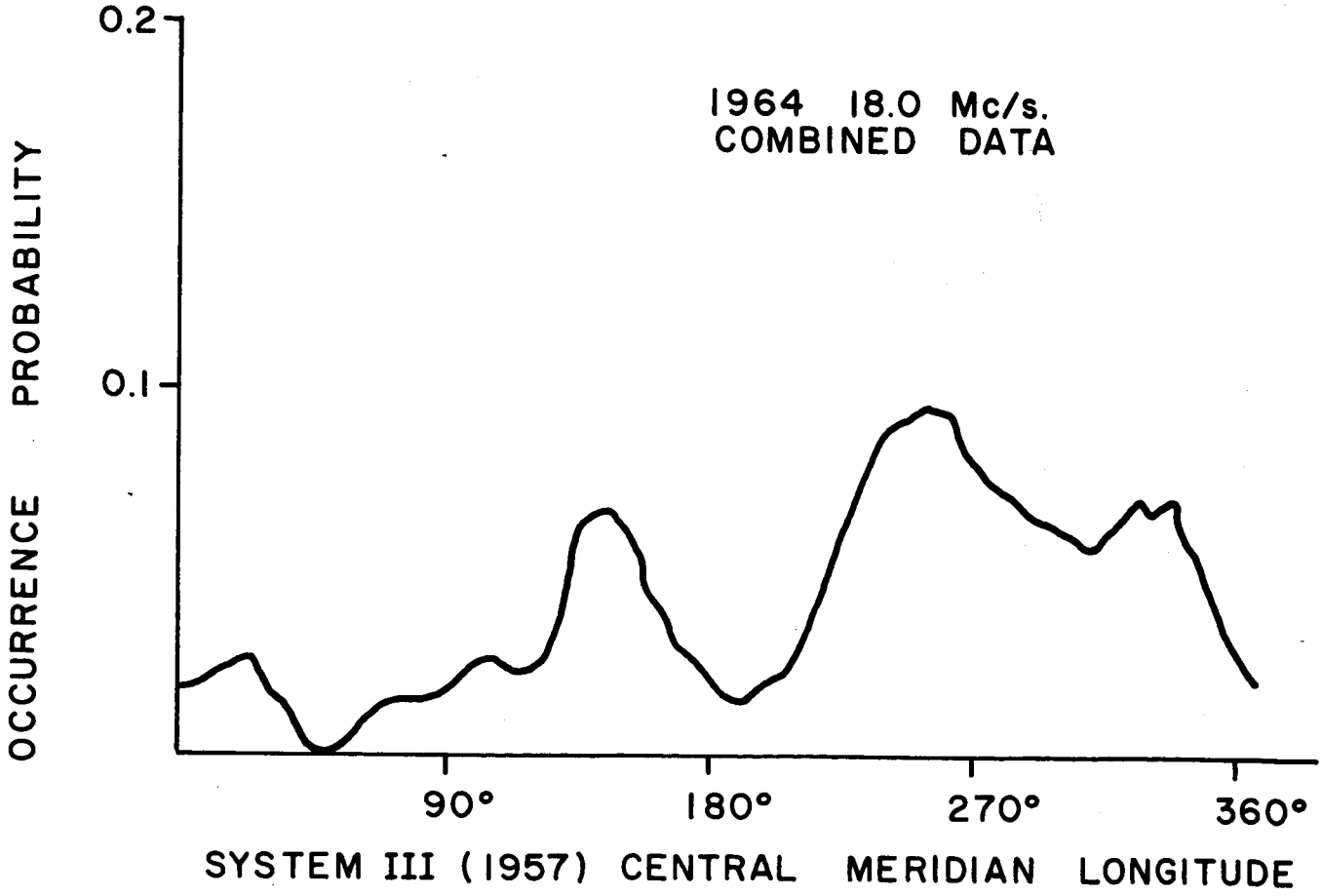
OCCURRENCE PROBABILITY
1963 18.0 Mc/s.
TALLAHASSEE
90°
180°
270°
360°
SYSTEM III (1957) CENTRAL MERIDIAN LONGITUDE


0.2
0.1
OCCURRENCE PROBABILITY
1964 18.0 Mc/s.
COMBINED DATA
90°
180°
270°
360°
SYSTEM III (1957) CENTRAL MERIDIAN LONGITUDE