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DECAMETER-WAVE RADIO OBSERVATIONS OF JUPITER DURING THE 1977 APPARITION

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DECAMETER-WAVE RADIO OBSERVATIONS OF JUPITER DURING THE 1977 APPARITION

BY

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This report presents a catalog of observations of Jupiter's sporadic decameter wavelength radio emissions obtained with the Goddard Space Flight Center Jupiter Monitor Network between June 1977 and May 1978. The data catalog is a continuation of a series of reports on results of the NASA Jupiter Monitor Network program. The details of the observing technique and data analysis procedures are discussed in earlier catalogs (references 1 thru 4).

The Jupiter Monitor program is designed to utilize a multi-station, global network of monitoring instruments in order to obtain nearly continuous, synoptic observations of the planet. During the 1977 apparition of Jupiter, data were collected using the Goddard Space Flight Center station in Greenbelt, MD. and at newly installed facilities at Orroral Valley (Canberra), Australia and the Nancay Radio Observatory in France.

Observations were obtained daily at frequencies of 16.7 and 22.2 MHz using five-element Yagi antennas at each end of a two-element interferometer. During the 1977 apparition, the Goddard and Nancay antennas

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did not track but remained fixed at a given hour angle on any particular day. Consequently the maximum possible length of an observing period was six hours per day. Automatic tracking of Jupiter for up to 12 hr/day was possible at Orroral Valley, however, radio frequency interference problems limited useful observing periods to a significantly lower value. A summary of the data collected during the apparition is tabulated below. The flux sensitivity of the survey is estimated to be 5×10^4 Jy for Goddard and Nancay and 2×10^5 Jy for Orroral.

FREQUENCY	STATION	TOTAL OBSERVATIONS	AVE. OBS. PER DAY	AVE. OCC. PROBABILITY
16.7 MHz	Goddard	746 hr.	5.0 hr.	.257
	Nancay	755	4.7	.258
	Orroral	350	4.1	.117
22.2	Goddard	1332	5.1	.069
	Nancay	925	5.6	.058
	Orroral	1110	7.7	.024

Plots of the two-dimensional emission occurrence probability distribution as a function of System III (1965) central meridian longitude (CML III) and departure of Io from superior geocentric conjunction (ϕIo) are given in Figure 1 for 16.7 MHz and in Figure 2 for 22.2 MHz. The complete data catalog is given in Table 1. Observations at 16.7 MHz are listed first and are followed by a listing of the 22.2 MHz data. For each day during the 1977 apparition, we list the Universal

Time (to the nearest 5 min.) of the beginning and end of each period during which useful, interference-free observations of Jupiter could be obtained. The corresponding values of CML III and ϕIo are also listed for each observation period. For those occasions when Jovian decametric activity was unambiguously detected during an observing period, the beginning and end times of the activity interval are listed along with the corresponding values of CML III and ϕIo for the event.

ACKNOWLEDGMENTS

Operation of the monitoring equipment at Nancay is supported by CNES under a joint NASA/CNES cooperative agreement. We are especially grateful to Dr. Andre Boischot and his colleagues at the Meudon Observatory and the Nancay Radio Astronomy Observatory for their assistance. We also wish to acknowledge the support of the Orroral Valley, Australia tracking station. Routine operation and maintenance of the Goddard station was managed by Mr. Frank E. Paul.

REFERENCES

1. "Decameter-Wave Radio Observations of Jupiter: Apparitions of 1965 to 1969", J. K. Alexander, GSFC Report X-615-70-2 (January 1970).
2. "Decameter-Wave Radio Observations of Jupiter: Apparitions of 1970-74", J.K. Alexander, M.L. Kaiser and S.S. Vaughan, GSFC Report X-693-75-48 (March 1975).
3. "Decameter-Wave Radio Observations of Jupiter during the 1975 Apparition", J.K. Alexander, M.L, Kaiser and S.S. Vaughan, GSFC Report X-695-76-146.
4. "Decameter-Wave Radio Observations of Jupiter during the 1976 Apparition", J.K. Alexander, M.L. Kaiser, and S.S. Vaughan, GSFC Report X-695-77-158.

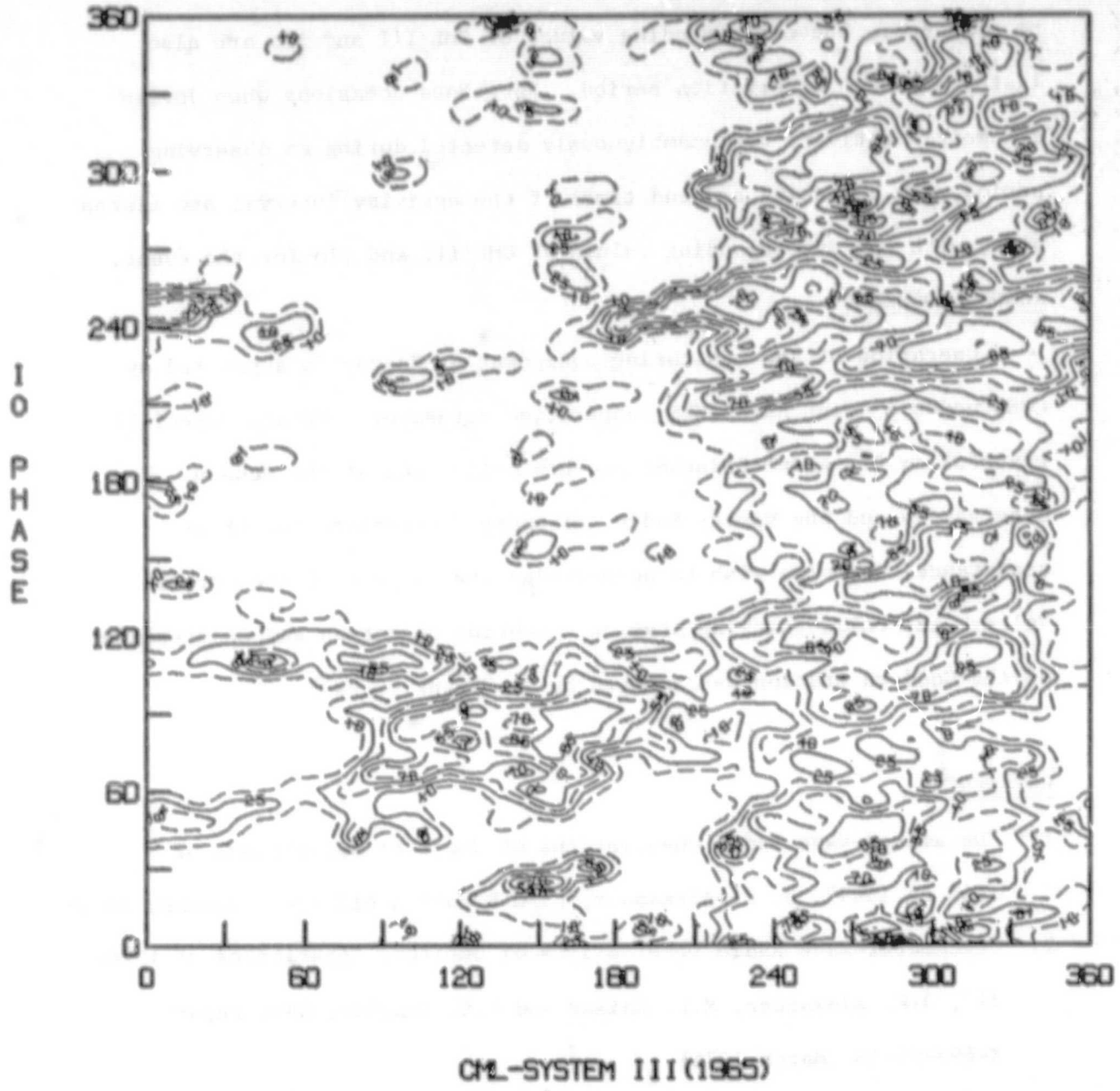

Fig. 1. Smoothed occurrence probability distribution at 16.7 MHz for the 1977 apparition as a function of System III (1965) central meridian longitude and phase of Io. Contours are plotted in 15% increments in occurrence probability beginning at a value of 10%.

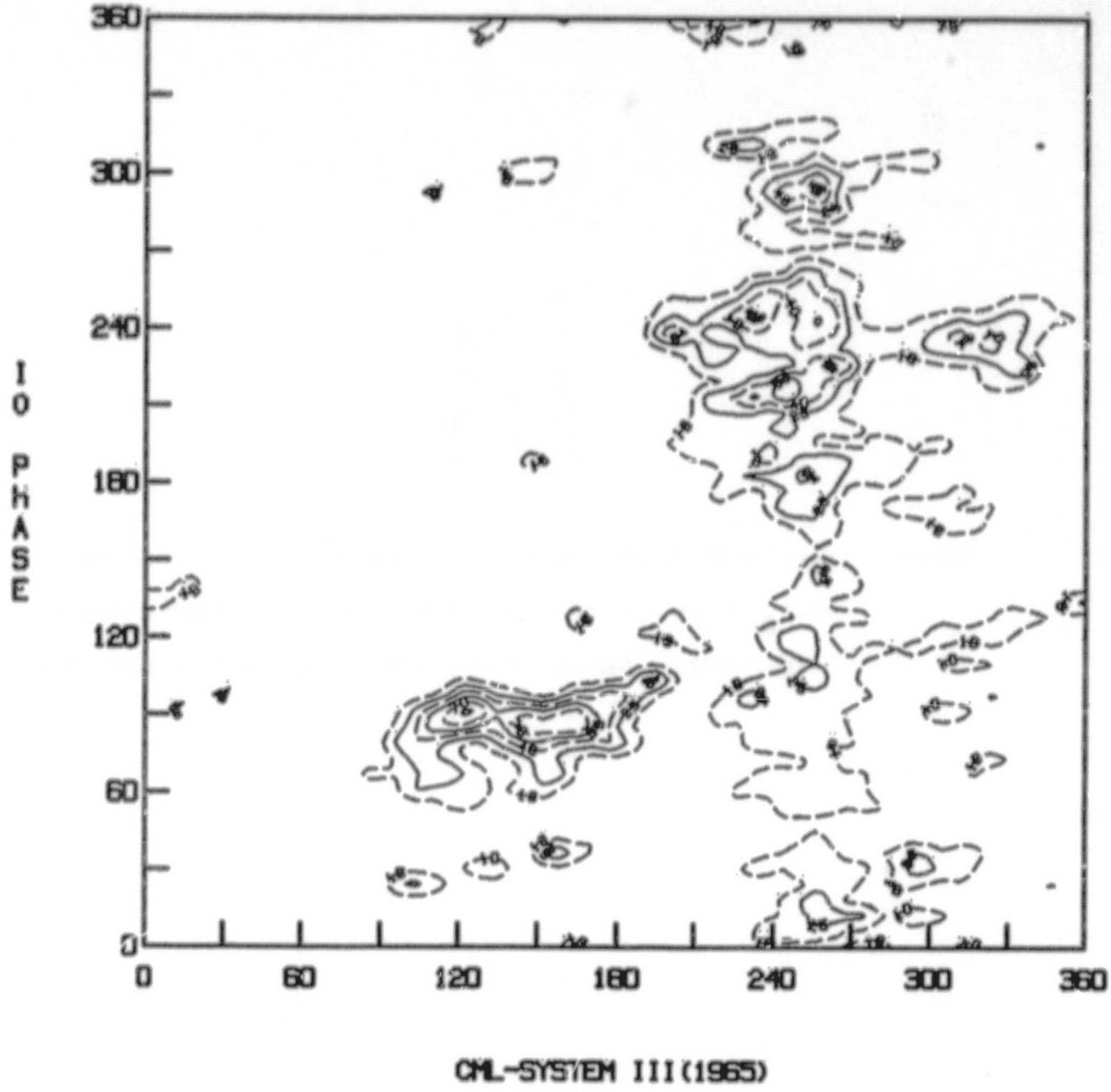

Fig. 2. Smoothed occurrence probability distribution at 22.2 MHz for the 1976 apparition as a function of System III (1965) central meridian longitude and phase of Io. Contours are plotted in 15% increments in occurrence probability beginning at a value of 10%.

Table 1. Catalog of Jupiter observations and activity at 16.7 and 22.2 MHz for the 1977 apparition obtained at Goddard Space Flight Center, Nancay, France and Orroral Valley, Australia.

16.7 MHZ GODDARD SPACE FLIGHT CENTER

DATE YY/MM/DD	OBSERVATIONS TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE	ACTIVITY TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE
77/ 6/29	950 - 1125	38.3 - 95.7	310.3 - 323.8			
77/ 7/ 1	945 - 1045	335.9 - 12.2	356.4 - 4.9			
77/ 7/ 5	930 - 1020	208.2 - 238.4	87.1 - 94.1			
77/ 7/ 7	925 - 1010	145.9 - 173.1	132.5 - 138.8			
77/ 7/ 7	1035 - 1105	188.2 - 206.3	142.4 - 146.6			
77/ 7/ 8	1005 - 1110	320.4 - 359.7	342.1 - 351.3			
77/ 7/ 9	920 - 1050	83.5 - 137.9	178.2 - 190.9			
77/ 7/10	915 - 1140	230.9 - 318.5	21.7 - 42.1			
				1040 - 1140	282.2 - 318.5	33.6 - 42.1
77/ 7/14	905 - 1055	106.2 - 172.7	112.8 - 128.2			
77/ 7/15	900 - 1010	253.6 - 295.9	315.8 - 325.7			
77/ 7/16	900 - 1120	43.9 - 128.5	158.3 - 178.1			
77/ 7/21	845 - 930	66.7 - 93.9	93.0 - 99.3			
77/ 7/24	835 - 1050	151.7 - 233.3	342.0 - 1.1			
				1040 - 1050	227.3 - 233.3	359.7 - 1.1
77/ 7/25	830 - 1055	299.1 - 26.7	183.7 - 204.2			
77/ 7/26	830 - 1035	89.5 - 165.0	27.8 - 45.3			
77/ 7/27	825 - 845	236.8 - 248.9	229.8 - 232.6			
77/ 7/27	905 - 930	261.0 - 276.1	235.5 - 239.0			
77/ 7/27	945 - 1005	285.2 - 297.3	241.2 - 244.0			
77/ 7/28	825 - 945	27.2 - 75.6	73.4 - 84.6			
77/ 7/29	820 - 1235	174.6 - 328.7	276.0 - 312.3			
				930 - 1235	216.9 - 328.7	286.0 - 312.3
77/ 8/10	740 - 925	155.1 - 218.6	189.6 - 204.5			
77/ 8/11	740 - 1030	305.5 - 48.3	33.5 - 57.3			
77/ 8/12	735 - 935	92.9 - 165.5	235.8 - 252.9			
77/ 8/13	730 - 1210	240.3 - 49.6	73.4 - 117.6			
				940 - 1005	318.9 - 334.0	96.6 - 100.1
				1125 - 1145	22.4 - 34.4	111.3 - 114.1
77/ 8/14	730 - 945	30.7 - 112.3	282.1 - 301.3			
				910 - 940	91.2 - 109.3	296.3 - 300.5
77/ 8/15	725 - 1025	178.1 - 286.9	124.0 - 149.4			
				915 - 1025	244.6 - 286.9	139.5 - 149.4
77/ 8/16	725 - 1030	328.5 - 80.4	328.2 - 354.3			
77/ 8/17	720 - 925	115.9 - 191.5	169.9 - 187.7			
77/ 8/17	940 - 1045	200.6 - 239.8	189.8 - 199.0			
77/ 8/17	1100 - 1135	248.9 - 282.2	201.1 - 209.0			
77/ 8/18	715 - 1105	263.3 - 42.4	13.3 - 45.6			
77/ 8/19	900 - 1035	117.2 - 174.7	231.1 - 244.6			
77/ 8/20	710 - 1050	201.2 - 334.2	58.9 - 89.8			
77/ 8/21	705 - 920	348.6 - 70.2	261.8 - 281.0			
77/ 8/22	705 - 1025	139.0 - 259.9	104.6 - 132.7			
				815 - 1025	181.3 - 259.9	114.4 - 132.7
77/ 8/23	705 - 825	289.4 - 337.8	308.7 - 320.0			
77/ 8/24	655 - 925	73.8 - 164.5	149.7 - 170.9			

16.7 MHZ GODDARD SPACE FLIGHT CENTER

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE	TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
77/ 8/25	655 - 1000	224.3 - 336.1	353.9 - 19.9			
77/ 8/26	650 - 1100	11.7 - 162.8	195.9 - 231.5			
77/ 8/27	650 - 1205	162.1 - 352.6	39.6 - 83.7			
77/ 9/ 8	605 - 1030	140.5 - 300.7	313.9 - 351.2			
77/ 9/ 9	605 - 1105	290.9 - 112.3	156.4 - 199.0			
77/ 9/10	600 - 1030	78.4 - 241.6	359.8 - 37.7			
77/ 9/11	600 - 1115	228.9 - 59.3	202.8 - 247.6			
				755 - 920	298.4 - 349.8	219.1 - 231.2
77/ 9/12	555 - 1145	16.3 - 227.9	45.5 - 94.6			
				725 - 1020	70.8 - 176.5	58.1 - 82.7
77/ 9/13	550 - 1155	163.8 - 24.5	248.5 - 300.2			
77/ 9/14	550 - 935	314.3 - 90.3	91.2 - 122.9			
				810 - 840	38.9 - 57.1	110.9 - 115.2
77/ 9/16	540 - 1035	249.2 - 79.7	136.5 - 18 .2			
				710 - 810	303.7 - 339.9	149.3 - 157.8
77/ 9/17	535 - 1045	36.7 - 224.1	340.1 - 23.5			
77/ 9/18	535 - 1100	187.2 - 23.7	182.8 - 229.1			
				720 - 1000	250.7 - 347.4	197.8 - 220.6
77/ 9/19	530 - 1040	334.7 - 162.1	25.8 - 60.3			
				950 - 1040	131.9 - 162.1	62.3 - 69.3
77/ 9/20	535 - 635	128.2 - 164.5	230.0 - 238.6			
77/ 9/20	805 - 1055	218.9 - 321.7	251.4 - 275.5			
				805 - 935	218.9 - 273.3	251.4 - 264.1
77/ 9/21	525 - 1130	272.7 - 133.3	71.6 - 123.0			
				940 - 1040	66.9 - 103.1	107.4 - 115.9
77/ 9/22	705 - 1125	123.7 - 280.8	289.9 - 326.5			
77/ 9/24	515 - 1115	350.2 - 215.8	321.1 - 11.7			
77/ 9/25	510 - 1110	145.7 - 3.3	163.1 - 214.3			
				715 - 955	221.3 - 318.0	180.8 - 203.6
77/ 9/26	720 - 1110	14.8 - 153.9	25.2 - 57.4			
77/ 9/27	500 - 1055	80.7 - 295.3	208.8 - 259.3			
				840 - 1050	213.7 - 292.3	240.2 - 258.6
77/ 9/28	500 - 1020	231.2 - 64.7	52.0 - 97.0			
77/ 9/28	1035 - 1050	73.7 - 82.8	99.1 - 101.2			
				555 - 745	264.5 - 331.0	59.7 - 75.2
77/ 9/29	410 - 1030	351.5 - 221.3	248.9 - 302.7			
				410 - 425	351.5 - 0.6	248.9 - 251.1
77/ 9/30	450 - 1025	166.3 - 8.8	97.2 - 144.6			
				615 - 920	217.6 - 329.5	109.2 - 135.4
77/10/ 1	450 - 1025	316.8 - 159.3	301.6 - 348.7			
				840 - 900	95.8 - 107.9	333.9 - 336.8
77/10/ 2	445 - 955	104.3 - 291.7	143.4 - 187.5			
				620 - 700	161.7 - 185.9	156.9 - 162.6
				805 - 955	225.2 - 291.7	171.9 - 187.5
77/10/ 3	440 - 1045	251.8 - 112.5	346.8 - 38.0			

16.7 MHZ GODDARD SPACE FLIGHT CENTER

DATE YY/MM/DD	OBSERVATIONS TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE
77/10/ 4	435 - 1040	39.4 - 260.0	189.2 - 241.2
77/10/ 5	840 - 1035	338.0 - 47.5	67.0 - 83.2
77/10/ 6	425 - 1030	334.4 - 195.1	235.1 - 296.8
77/10/ 7	425 - 1030	125.0 - 345.6	77.8 - 129.4
77/10/ 8	420 - 1025	272.5 - 133.2	281.4 - 332.9
77/10/ 9	420 - 1025	63.1 - 283.7	124.0 - 175.8
77/10/10	410 - 1015	207.6 - 68.2	326.8 - 18.0
77/10/11	410 - 1015	358.1 - 218.8	169.7 - 221.7
77/10/12	405 - 1010	145.7 - 6.4	12.7 - 63.9
77/10/13	405 - 1010	296.3 - 156.9	216.4 - 268.2
77/10/14	400 - 1005	83.8 - 304.5	58.6 - 110.0
77/10/15	525 - 1000	285.8 - 92.0	274.9 - 313.7
77/10/16	350 - 955	18.9 - 239.6	104.0 - 155.8
77/10/17	350 - 550	169.5 - 242.1	308.4 - 325.2
77/10/17	725 - 950	299.5 - 27.2	338.6 - 358.9
77/10/18	345 - 950	317.1 - 177.7	150.4 - 202.4
77/10/19	340 - 945	104.6 - 325.3	353.6 - 44.8
77/10/20	510 - 940	309.6 - 112.9	209.9 - 248.3
77/10/21	620 - 720	142.6 - 178.8	62.7 - 71.2
77/10/21	845 - 935	230.2 - 260.5	85.1 - 90.2
77/10/26	315 - 925	63.7 - 287.4	334.7 - 26.6
77/10/27	310 - 915	211.3 - 72.0	177.2 - 229.2
77/10/28	305 - 910	358.9 - 219.6	19.9 - 71.2

TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
535 - 709	285.1 - 336.5	354.5 - 6.5
935 - 1020	220.7 - 247.9	231.9 - 236.3
435 - 600	340.5 - 31.8	236.5 - 248.6
435 - 605	131.0 - 183.4	79.2 - 91.9
840 - 900	279.1 - 291.2	113.8 - 116.6
920 - 1000	303.3 - 327.5	119.5 - 125.1
750 - 810	190.0 - 202.1	153.8 - 156.6
940 - 1025	256.5 - 283.7	169.4 - 175.8
600 - 710	274.1 - 316.4	342.3 - 352.1
640 - 805	239.4 - 290.8	34.4 - 46.4
840 - 855	311.9 - 321.0	51.3 - 53.4
545 - 645	147.3 - 183.6	73.4 - 81.8
650 - 715	337.2 - 352.3	286.9 - 290.4
430 - 525	43.1 - 76.4	109.7 - 117.4
750 - 825	314.6 - 333.8	342.1 - 347.0
550 - 625	333.8 - 353.0	215.6 - 220.6
740 - 825	40.3 - 67.5	231.2 - 237.6
620 - 720	142.6 - 178.8	62.7 - 71.2
730 - 925	217.9 - 287.4	10.4 - 26.6
320 - 640	217.4 - 338.3	178.7 - 207.1
555 - 620	101.7 - 116.8	43.8 - 47.3
645 - 740	131.9 - 165.2	50.8 - 58.6

16.7 MHZ GODDARD SPACE FLIGHT CENTER

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE
77/10/29	530 - 905	237.2 - 7.2	244.5 - 274.9
77/10/30	400 - 920	333.4 - 166.9	74.4 - 119.7
77/10/31	700 - 900	232.9 - 305.4	304.2 - 321.1
77/11/ 1	250 - 715	232.3 - 32.5	111.6 - 149.3
77/11/ 1	830 - 855	77.9 - 93.0	160.0 - 163.5
77/11/ 2	245 - 850	19.9 - 240.6	315.2 - 6.4
77/11/ 3	240 - 845	167.5 - 28.2	157.6 - 209.5
77/11/ 4	235 - 840	315.1 - 173.8	0.5 - 51.7
77/11/ 5	235 - 510	105.8 - 199.5	204.3 - 226.3
77/11/ 5	535 - 605	214.6 - 232.8	229.9 - 234.2
77/11/ 5	615 - 715	238.8 - 275.1	235.6 - 244.1
77/11/ 6	230 - 835	253.4 - 114.1	46.6 - 98.1
77/11/ 7	225 - 800	41.0 - 243.6	250.2 - 297.5
77/11/ 8	250 - 825	206.8 - 49.3	96.4 - 144.0
77/11/ 9	215 - 820	336.3 - 196.9	295.8 - 347.1
77/11/10	215 - 815	126.9 - 344.6	138.8 - 190.0
77/11/11	510 - 1110	23.4 - 241.0	7.2 - 57.8
77/11/12	505 - 1110	171.0 - 31.7	210.5 - 262.2
77/11/13	500 - 1105	318.6 - 179.3	52.6 - 104.2
77/11/14	455 - 1100	106.3 - 326.9	256.3 - 307.8
77/11/15	445 - 620	250.9 - 308.3	97.6 - 111.1
77/11/15	720 - 1055	344.6 - 114.6	119.6 - 150.2
77/11/16	445 - 1050	41.5 - 262.2	301.9 - 353.2
77/11/17	445 - 1045	192.2 - 49.9	145.0 - 196.3

TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
530 - 715	237.2 - 300.7	246.5 - 259.4
735 - 815	312.8 - 337.0	262.2 - 267.9
815 - 850	127.6 - 148.7	110.5 - 115.5
905 - 920	157.8 - 166.9	117.6 - 119.7
740 - 825	257.0 - 284.2	309.9 - 316.2
250 - 420	232.3 - 286.7	111.6 - 124.4
510 - 615	258.2 - 297.5	178.9 - 188.2
535 - 605	214.6 - 232.8	229.9 - 234.2
615 - 715	238.8 - 275.1	235.6 - 244.1
705 - 900	210.3 - 279.8	289.8 - 305.9
308 - 600	212.8 - 321.7	97.8 - 123.3
710 - 730	154.6 - 166.7	337.3 - 340.1
505 - 610	229.7 - 269.0	163.0 - 172.2
830 - 1020	294.9 - 1.4	239.6 - 255.1
835 - 1010	88.6 - 146.1	82.9 - 96.4
835 - 1015	239.3 - 299.7	287.4 - 301.3
445 - 520	250.9 - 272.0	97.6 - 102.6
555 - 620	293.2 - 308.3	107.5 - 111.1
850 - 925	39.0 - 60.2	132.4 - 137.4
520 - 640	213.3 - 261.7	150.0 - 161.4
705 - 800	276.8 - 310.1	165.0 - 172.8

16.7 MHZ GODDARD SPACE FLIGHT CENTER

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE	TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
77/11/18	440 - 1045	339.8 - 200.5	348.0 - 39.3			
				840 - 1005	124.9 - 176.3	21.7 - 33.7
77/11/19	435 - 1130	127.5 - 18.4	191.1 - 250.1			
				635 - 1130	200.0 - 18.4	208.2 - 250.1
77/11/20	430 - 1135	275.1 - 172.1	33.5 - 93.5			
				1030 - 1135	132.8 - 172.1	84.2 - 93.5
77/11/21	425 - 1030	62.8 - 283.4	237.1 - 288.7			
				650 - 720	150.4 - 168.6	257.6 - 261.9
77/11/22	420 - 1025	210.4 - 71.1	79.1 - 130.9			
				540 - 740	258.8 - 331.3	90.4 - 107.5
77/11/23	415 - 1020	358.1 - 218.7	282.9 - 334.1			
77/11/24	415 - 1050	148.7 - 27.6	125.8 - 182.0			
				740 - 805	272.7 - 287.8	155.0 - 168.5
				845 - 1050	312.0 - 27.6	164.2 - 182.0
77/11/25	410 - 850	296.4 - 165.7	329.0 - 8.3			
				825 - 845	90.6 - 102.6	4.8 - 7.6
77/11/26	405 - 605	84.0 - 156.6	171.9 - 189.0			
77/11/26	720 - 1105	201.9 - 338.0	199.7 - 231.6			
				940 - 1105	286.6 - 338.0	219.6 - 231.6
77/11/27	400 - 1005	231.7 - 92.4	14.5 - 65.9			
				710 - 850	346.6 - 47.0	41.2 - 55.3
77/11/28	455 - 1000	55.6 - 240.0	226.5 - 269.7			
77/11/29	350 - 955	167.0 - 27.7	60.1 - 111.8			
				540 - 825	233.5 - 333.3	75.6 - 99.0
77/11/30	315 - 950	296.5 - 175.3	259.6 - 315.2			
				315 - 410	296.5 - 329.8	259.6 - 267.4
77/12/ 1	345 - 945	105.3 - 323.0	106.7 - 157.9			
				345 - 405	105.3 - 117.4	106.7 - 109.5
				720 - 855	235.3 - 292.8	137.3 - 150.8
77/12/ 2	300 - 810	228.8 - 56.2	304.5 - 348.6			
77/12/ 2	830 - 940	68.3 - 110.7	350.8 - 0.6			
				300 - 345	228.8 - 256.0	304.5 - 310.8
				405 - 600	268.1 - 337.6	313.6 - 329.8
77/12/ 3	335 - 1015	40.6 - 282.5	152.8 - 209.8			
				630 - 710	146.5 - 170.6	177.7 - 183.4
				820 - 1015	213.0 - 282.5	193.4 - 209.8
77/12/ 4	330 - 935	188.3 - 49.0	355.6 - 46.9			
				420 - 725	218.5 - 330.4	2.6 - 28.6
77/12/ 5	325 - 930	336.0 - 196.6	199.0 - 250.7			
77/12/ 6	320 - 925	123.6 - 344.3	41.1 - 92.8			
				555 - 810	217.3 - 299.0	63.0 - 82.1
				905 - 920	332.2 - 341.3	89.9 - 92.0
77/12/ 7	250 - 920	256.2 - 132.0	241.4 - 296.4			
				250 - 445	256.2 - 325.7	241.4 - 257.6
77/12/ 8	310 - 915	58.9 - 279.6	86.9 - 138.9			

16.7 MHZ GODDARD SPACE FLIGHT CENTER

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE	TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
				330 - 405	71.0 - 92.2	89.8 - 94.8
				545 - 635	152.7 - 182.9	109.0 - 116.1
				735 - 855	219.2 - 267.5	124.6 - 136.0
77/12/ 9	310 - 910	209.6 - 67.3	291.3 - 341.8			
				310 - 615	209.6 - 321.5	291.3 - 317.3
77/12/10	300 - 905	354.3 - 214.9	133.0 - 185.1			
77/12/11	300 - 900	144.9 - 2.6	336.8 - 27.3			
				410 - 625	187.3 - 268.9	346.6 - 5.5
77/12/12	255 - 950	292.6 - 183.5	180.0 - 238.9			
				720 - 820	92.8 - 129.1	217.6 - 226.1
				905 - 950	156.3 - 183.5	232.5 - 238.9
77/12/13	250 - 855	80.2 - 300.9	22.3 - 73.8			
				655 - 850	228.4 - 297.9	56.8 - 73.1
77/12/14	220 - 850	212.8 - 88.6	222.5 - 277.5			
				220 - 610	212.8 - 351.9	222.5 - 255.0
77/12/15	240 - 920	15.6 - 257.4	68.0 - 124.9			
				445 - 610	91.1 - 142.5	83.7 - 97.8
				630 - 720	154.6 - 184.9	100.7 - 107.8
				810 - 840	215.1 - 233.2	114.9 - 119.2
				855 - 920	242.3 - 257.4	121.3 - 124.9
77/12/16	235 - 840	163.2 - 23.9	271.8 - 323.1			
				415 - 740	223.7 - 347.6	285.9 - 314.6
77/12/17	230 - 835	310.9 - 171.6	114.1 - 166.1			
				235 - 300	313.9 - 329.0	114.8 - 118.3
				750 - 810	144.4 - 156.5	159.7 - 162.5
77/12/18	225 - 545	98.5 - 219.5	317.3 - 345.4			
77/12/18	620 - 725	240.6 - 279.9	350.3 - 359.4			
				310 - 345	125.7 - 146.9	323.6 - 328.5
				630 - 725	246.7 - 279.9	351.7 - 359.4
77/12/19	245 - 825	261.3 - 106.9	163.8 - 212.2			
				245 - 505	261.3 - 345.9	163.6 - 183.8
77/12/20	215 - 825	33.8 - 257.5	3.8 - 54.9			
				710 - 825	212.2 - 257.5	44.3 - 54.9
77/12/21	215 - 815	184.5 - 42.2	207.1 - 258.0			
				240 - 730	199.6 - 15.0	210.7 - 251.7
77/12/22	210 - 825	332.2 - 198.9	49.2 - 102.3			
				520 - 825	87.0 - 198.9	76.1 - 102.3
77/12/23	200 - 420	116.8 - 201.4	252.3 - 272.0			
77/12/24	155 - 800	264.4 - 125.1	94.4 - 146.4			
				155 - 305	264.4 - 306.8	94.4 - 104.3
				540 - 550	40.5 - 46.5	126.4 - 127.8
77/12/25	150 - 755	52.1 - 272.8	297.9 - 349.1			
				415 - 500	139.7 - 167.0	318.2 - 324.5
77/12/26	145 - 750	199.7 - 60.4	140.6 - 192.5			
				235 - 550	229.9 - 347.8	147.7 - 175.5

16.7 MHZ GODDARD SPACE FLIGHT CENTER

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE
77/12/27	140 - 745	347.4 - 208.0	343.3 - 34.7
77/12/28	135 - 840	135.0 - 32.0	186.7 - 247.0
77/12/29	50 - 755	258.4 - 155.4	23.3 - 83.4
77/12/30	125 - 755	70.3 - 306.1	230.7 - 287.6
77/12/31	125 - 725	220.9 - 78.6	75.4 - 126.7
78/ 1/ 1	120 - 845	8.6 - 277.6	279.1 - 341.5
78/ 1/ 2	115 - 305	156.3 - 222.7	121.5 - 137.2
78/ 1/ 2	320 - 720	231.8 - 16.9	139.4 - 173.5
78/ 1/ 3	105 - 710	300.8 - 161.5	323.8 - 15.1
78/ 1/ 4	105 - 710	91.4 - 312.1	167.7 - 219.6
78/ 1/ 5	55 - 705	236.0 - 99.7	9.3 - 61.6

TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
715 - 745	39.2 - 57.4	187.6 - 191.6
325 - 840	201.5 - 32.0	202.4 - 247.0
50 - 300	258.4 - 337.0	23.3 - 41.6
340 - 755	1.2 - 155.4	47.2 - 83.4
355 - 420	161.0 - 176.1	253.9 - 257.4
530 - 755	218.4 - 306.1	267.3 - 287.6
135 - 725	227.0 - 78.6	76.9 - 126.7
340 - 350	93.2 - 99.2	298.7 - 300.1
725 - 750	229.2 - 244.4	330.3 - 333.8
835 - 845	271.6 - 277.6	340.1 - 341.5
340 - 505	243.8 - 295.2	142.2 - 154.3
120 - 130	309.8 - 315.9	325.9 - 327.3
200 - 240	334.0 - 358.2	331.5 - 337.2
55 - 335	236.0 - 332.8	9.3 - 31.9
615 - 650	69.5 - 90.7	54.5 - 59.4

16.7 MHZ NANCAY, FRANCE

DATE YY/MM/DD	OBSERVATIONS TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE	ACTIVITY TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE
77/ 9/12	340 - 635	294.7 - 40.5	26.6 - 51.1			
77/ 9/13	335 - 605	82.2 - 172.9	229.3 - 250.6			
77/ 9/14	330 - 555	229.7 - 317.3	71.6 - 91.9			
77/ 9/14	645 - 750	347.6 - 26.8	99.0 - 108.1			
77/ 9/15	330 - 550	20.2 - 104.8	275.6 - 295.5			
77/ 9/16	325 - 530	167.6 - 243.2	117.5 - 135.1			
77/ 9/17	320 - 450	315.1 - 9.5	321.1 - 333.7			
77/ 9/18	320 - 515	105.6 - 175.1	163.7 - 180.0			
77/ 9/19	210 - 515	213.8 - 325.6	357.8 - 23.7			
				210 - 335	213.8 - 265.2	357.8 - 9.7
				405 - 440	283.3 - 304.5	13.9 - 18.8
77/ 9/20	310 - 235	40.6 - 19.4	209.4 - 204.4			
77/ 9/20	615 - 625	152.4 - 158.5	235.7 - 237.1			
77/ 9/21	310 - 625	191.1 - 309.0	52.6 - 80.0			
77/ 9/22	130 - 550	281.1 - 78.3	242.3 - 279.2			
				130 - 205	281.1 - 302.3	242.3 - 247.3
77/ 9/23	240 - 815	114.0 - 316.5	94.9 - 142.3			
				240 - 310	114.0 - 132.1	94.9 - 99.2
				340 - 415	150.3 - 171.4	104 - 108.3
				605 - 725	237.9 - 286.3	123.9 - 135.2
77/ 9/24	255 - 640	273.6 - 49.6	301.4 - 333.1			
				435 - 510	334.0 - 355.2	315.5 - 320.4
77/ 9/25	255 - 600	64.1 - 175.9	143.9 - 170.2			
77/ 9/26	250 - 540	211.6 - 314.4	347.3 - 11.2			
				315 - 540	226.7 - 314.4	350.8 - 11.2
77/ 9/27	245 - 700	359.1 - 189.5	189.6 - 234.5			
				630 - 645	135.1 - 144.2	221.7 - 223.8
77/ 9/28	245 - 600	149.6 - 267.5	33.1 - 60.4			
				450 - 600	225.2 - 267.5	50.6 - 60.4
77/ 9/29	200 - 445	272.9 - 12.7	230.4 - 253.9			
				200 - 335	272.9 - 330.4	230.4 - 244.0
77/ 9/30	235 - 530	84.6 - 190.4	78.2 - 102.9			
77/ 9/30	545 - 605	199.5 - 211.6	105.0 - 107.8			
77/ 9/30	620 - 700	220.7 - 244.8	109.9 - 115.6			
				240 - 500	87.7 - 172.3	78.9 - 98.6
				630 - 700	226.7 - 244.8	111.3 - 115.6
77/10/ 1	230 - 545	232.2 - 350.0	281.8 - 309.3			
				255 - 530	247.3 - 341.0	285.3 - 307.2
77/10/ 2	230 - 730	22.7 - 204.1	124.3 - 166.9			
				540 - 705	137.6 - 188.9	151.3 - 163.3
77/10/ 3	225 - 625	170.2 - 315.3	327.9 - 1.6			
				335 - 625	212.5 - 315.3	337.7 - 1.6
77/10/ 4	220 - 405	317.7 - 21.2	170.0 - 184.9			
77/10/ 5	215 - 250	105.3 - 126.4	13.0 - 17.9			
77/10/ 6	215 - 530	255.8 - 13.7	216.6 - 244.3			

16.7 MHZ NANCAY, FRANCE

DATE YY/MM/DD	OBSERVATIONS TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE
77/10/ 7	210 - 625	43.3 - 197.5	58.8 - 94.7
77/10/ 8	205 - 500	190.9 - 296.7	262.3 - 287.1
77/10/ 9	205 - 500	341.4 - 87.2	104.9 - 129.7
77/10/10	200 - 500	129.0 - 237.8	308.5 - 333.8
77/10/11	155 - 525	276.5 - 43.5	150.5 - 180.4
77/10/12	150 - 325	64.1 - 121.5	353.8 - 7.1
77/10/12	350 - 545	136.6 - 206.1	10.6 - 26.7
77/10/13	150 - 555	214.6 - 2.8	197.1 - 232.0
77/10/14	145 - 530	2.2 - 138.2	39.6 - 71.2
77/10/15	140 - 550	149.8 - 300.9	243.0 - 278.4
77/10/16	135 - 545	297.3 - 88.5	84.9 - 120.3
77/10/17	135 - 530	87.9 - 230.0	289.3 - 322.4
77/10/18	130 - 550	235.5 - 32.6	131.3 - 168.2
77/10/19	125 - 545	23.0 - 180.2	334.7 - 11.1
77/10/20	120 - 620	170.6 - 352.0	177.1 - 219.9
77/10/21	115 - 545	318.2 - 121.4	19.9 - 57.8
77/10/22	115 - 625	108.8 - 296.2	223.8 - 267.8
77/10/23	110 - 530	256.3 - 53.5	65.9 - 102.6
77/10/24	105 - 600	43.9 - 222.3	269.5 - 311.1
77/10/25	100 - 615	191.5 - 21.9	111.4 - 156.2
77/10/26	55 - 610	339.1 - 169.5	315 0 - 359.2
77/10/27	55 - 515	129.7 - 286.9	158.0 - 195.0
77/10/28	45 - 530	274.3 - 86.6	0.3 - 40.3
77/10/29	45 - 555	64.9 - 252.3	204.0 - 248.1
77/10/30	40 - 520	212.5 - 21.8	46.3 - 85.7
77/10/30	2335 - 2400	323.8 - 338.9	241.4 - 244.9

TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
300 - 525	283.0 - 10.7	223.0 - 243.6
315 - 625	82.6 - 197.5	68.0 - 94.7
320 - 500	236.2 - 296.7	272.9 - 287.1
305 - 315	17.7 - 23.8	113.4 - 114.8
420 - 440	4.2 - 16.3	171.2 - 174.0
400 - 440	142.7 - 166.8	12.0 - 17.6
350 - 550	287.2 - 359.7	214.2 - 231.3
205 - 240	14.3 - 35.4	42.4 - 47.4
445 - 550	261.6 - 300.9	269.2 - 278.4
415 - 525	34.0 - 76.4	107.5 - 117.4
430 - 520	76.1 - 106.3	47.2 - 54.3
315 - 540	181.3 - 269.0	240.8 - 261.4
215 - 255	295.6 - 319.8	75.0 - 80.7
155 - 350	224.8 - 294.3	119.2 - 135.6
430 - 450	318.5 - 330.6	141.2 - 144.1
310 - 515	211.3 - 286.9	177.2 - 195.0
45 - 120	274.3 - 295.4	0.3 - 5.2
135 - 300	304.5 - 355.9	7.3 - 19.2
500 - 535	219.1 - 252.3	240.3 - 248.1

16.7 MHZ NANCAY, FRANCE

DATE YY/MM/DD	OBSERVATIONS TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE
77/10/31	0 - 530	338.9 - 178.4	244.9 - 291.6
77/11/ 1	10 - 535	135.6 - 332.1	89.0 - 135.1
77/11/ 2	30 - 540	298.3 - 125.7	296.2 - 339.8
77/11/ 3	25 - 555	85.9 - 285.4	138.3 - 185.3
77/11/ 4	20 - 530	233.5 - 61.0	341.6 - 25.0
77/11/ 5	15 - 615	21.1 - 238.8	184.4 - 235.6
77/11/ 6	15 - 615	171.8 - 29.4	27.6 - 78.3
77/11/ 6	2335 - 2400	298.2 - 313.3	226.1 - 229.6
77/11/ 7	0 - 605	313.3 - 174.0	229.6 - 281.3
77/11/ 8	10 - 305	110.0 - 215.8	73.8 - 98.5
77/11/ 8	315 - 605	221.9 - 324.7	99.9 - 124.1
77/11/ 9	0 - 605	254.6 - 115.3	276.8 - 328.2
77/11/10	0 - 540	45.3 - 250.9	119.6 - 168.0
77/11/10	2350 - 2400	189.9 - 195.9	322.3 - 323.7
77/11/11	0 - 325	195.9 - 319.9	323.7 - 352.4
77/11/11	355 - 535	338.0 - 38.5	356.7 - 10.7
77/11/11	2350 - 2400	340.5 - 346.6	165.6 - 167.0
77/11/12	0 - 550	346.6 - 198.2	167.0 - 216.9
77/11/12	2345 - 2400	128.2 - 137.2	8.3 - 10.4
77/11/13	0 - 550	137.2 - 348.9	10.4 - 59.6
77/11/13	2340 - 2400	275.8 - 287.9	211.7 - 214.5
77/11/14	0 - 545	287.9 - 136.5	214.5 - 263.4
77/11/14	2335 - 2400	63.4 - 78.5	53.8 - 57.3
77/11/15	0 - 540	78.5 - 284.1	57.3 - 105.4

ACTIVITY TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE
110 - 245	230.6 - 288.1	50.5 - 63.9
335 - 405	318.3 - 336.4	70.9 - 75.2
2335 - 2400	323.8 - 338.9	241.4 - 244.9
0 - 40	338.9 - 3.1	244.9 - 250.6
10 - 125	135.6 - 180.9	89.0 - 99.6
245 - 430	229.3 - 292.8	110.9 - 125.8
505 - 550	255.2 - 282.4	178.2 - 184.6
200 - 225	294.0 - 309.1	355.6 - 359.1
545 - 615	220.7 - 238.8	231.3 - 235.6
130 - 420	217.1 - 319.9	38.1 - 62.0
2335 - 2400	298.2 - 313.3	226.1 - 229.6
0 - 110	313.3 - 355.7	229.6 - 239.6
125 - 220	4.7 - 38.0	241.7 - 249.5
10 - 230	110.0 - 194.7	73.8 - 93.6
315 - 555	221.9 - 318.6	99.9 - 122.6
0 - 245	254.6 - 354.4	276.8 - 300.1
110 - 250	238.3 - 298.7	333.5 - 347.5
450 - 535	161.9 - 189.1	208.3 - 24.7
310 - 415	252.1 - 291.4	37.1 - 46.3
115 - 215	333.2 - 9.5	225.2 - 233.7
230 - 310	18.6 - 42.8	235.8 - 241.5

16.7 MHZ NANCAY, FRANCE

DATE YY/MM/DD	OBSERVATIONS TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE
77/11/15	2330 - 2400	211.1 - 229.2	257.5 - 261.8
77/11/16	0 - 535	229.2 - 71.8	261.8 - 309.0
77/11/16	2325 - 2400	358.7 - 19.9	99.5 - 104.5
77/11/17	0 - 530	19.9 - 219.4	104.5 - 151.4
77/11/17	2325 - 2400	149.4 - 170.5	303.8 - 308.8
77/11/18	0 - 525	170.5 - 7.0	308.8 - 354.4
77/11/18	2320 - 2400	297.0 - 321.2	146.2 - 151.9
77/11/19	0 - 520	321.2 - 154.7	151.9 - 197.5
77/11/19	2315 - 2400	84.7 - 111.9	349.2 - 355.6
77/11/20	0 - 520	111.9 - 305.3	355.6 - 40.5
77/11/20	2310 - 2400	232.3 - 262.5	192.4 - 199.5
77/11/21	0 - 120	262.5 - 310.9	199.5 - 210.9
77/11/21	215 - 515	344.2 - 93.0	218.7 - 244.2
77/11/21	2305 - 2400	19.9 - 53.2	34.7 - 42.4
77/11/22	0 - 510	53.2 - 240.6	42.4 - 86.2
77/11/22	2300 - 2400	167.6 - 203.9	238.4 - 246.9
77/11/23	0 - 505	203.9 - 28.3	246.9 - 289.9
77/11/23	2255 - 2400	315.2 - 354.5	80.3 - 89.5
77/11/24	0 - 500	354.5 - 175.9	89.5 - 132.2
77/11/24	2255 - 2400	105.9 - 145.2	284.8 - 293.9
77/11/25	0 - 455	145.2 - 323.6	293.9 - 335.4
77/11/25	2250 - 2400	253.6 - 295.9	127.0 - 137.0
77/11/26	0 - 450	295.9 - 111.2	137.0 - 178.3
77/11/26	2245 - 2400	41.2 - 86.6	330.3 - 340.8
77/11/27	0 - 450	86.6 - 261.9	340.8 - 21.5
77/11/27	2240 - 2400	188.9 - 237.2	173.2 - 184.6
77/11/28	0 - 445	237.2 - 49.6	184.6 - 225.1
77/11/28	2200 - 2400	315.4 - 27.9	10.8 - 27.6

TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
110 - 315	120.9 - 196.4	67.2 - 84.8
335 - 400	208.5 - 223.7	87.7 - 91.2
440 - 535	247.8 - 281.1	96.9 - 104.7
2345 - 2400	220.1 - 229.2	259.7 - 261.8
0 - 205	229.2 - 304.8	261.8 - 279.4
30 - 55	38.0 - 53.1	108.7 - 112.3
105 - 145	59.2 - 83.4	113.7 - 119.4
215 - 420	252.2 - 327.7	327.7 - 345.2
340 - 450	244.9 - 287.2	26.4 - 36.3
0 - 100	262.5 - 298.8	199.5 - 208.0
230 - 330	143.9 - 180.2	63.6 - 72.0
2310 - 2400	173.6 - 203.9	239.8 - 246.9
0 - 55	203.9 - 237.1	246.9 - 254.6
110 - 130	246.2 - 258.3	256.8 - 259.6
145 - 240	267.4 - 300.6	261.7 - 269.5
330 - 350	330.8 - 342.9	276.5 - 279.3
205 - 245	70.1 - 94.3	107.3 - 113.0

16.7 MHZ NANCAY, FRANCE

DATE YY/MM/DD	OBSERVATIONS TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE
77/11/29	0 - 440	27.9 - 197.2	27.6 - 67.1
77/11/29	2230 - 2400	124.2 - 178.6	219.3 - 232.0
77/11/30	0 - 435	178.6 - 344.9	232.0 - 270.9
77/11/30	2225 - 2400	271.8 - 329.3	61.3 - 74.7
77/12/ 1	0 - 430	329.3 - 132.5	74.7 - 113.1
77/12/ 1	2220 - 2400	59.5 - 120.0	265.1 - 279.2
77/12/ 2	0 - 440	120.0 - 289.3	279.2 - 318.6
77/12/ 2	2215 - 2400	207.2 - 270.6	107.2 - 122.2
77/12/ 3	0 - 420	270.6 - 67.8	122.2 - 159.2
77/12/ 3	2215 - 2400	357.8 - 61.3	311.4 - 326.1
77/12/ 4	0 - 545	61.3 - 269.9	326.1 - 14.5
77/12/ 4	2210 - 2400	145.5 - 212.0	154.1 - 169.8
77/12/ 5	0 - 410	212.0 - 3.2	169.8 - 205.4
77/12/ 5	2205 - 2400	293.2 - 2.7	356.8 - 13.0
77/12/ 6	0 - 410	2.7 - 153.8	13.0 - 48.2
77/12/ 6	2200 - 2400	80.8 - 153.4	200.2 - 217.3
77/12/ 7	0 - 405	153.4 - 301.5	217.3 - 252.0
77/12/ 7	2200 - 2400	231.5 - 304.1	43.1 - 60.0
77/12/ 8	0 - 400	304.1 - 89.2	60.0 - 94.0
77/12/ 8	2110 - 2400	351.9 - 94.7	240.5 - 264.6
77/12/ 9	0 - 355	94.7 - 236.8	264.6 - 297.6
77/12/ 9	2125 - 2205	151.7 - 175.9	85.4 - 91.1
77/12/ 9	2230 - 2400	191.0 - 245.4	94.6 - 107.4
77/12/10	0 - 350	245.4 - 24.5	107.4 - 140.2
77/12/10	2140 - 2400	311.4 - 36.1	291.9 - 311.5

TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
2200 - 2225	315.4 - 330.5	10.8 - 14.3
205 - 220	103.5 - 112.6	45.2 - 47.4
325 - 340	151.9 - 160.9	56.5 - 58.6
100 - 405	214.9 - 326.7	240.5 - 266.7
2340 - 2400	317.2 - 329.3	71.9 - 74.7
0 - 20	329.3 - 341.4	74.7 - 77.6
340 - 405	102.3 - 117.4	105.9 - 109.5
100 - 140	156.2 - 180.4	287.7 - 293.3
245 - 440	219.7 - 289.3	302.4 - 318.6
2300 - 2400	234.4 - 270.6	113.6 - 122.2
0 - 150	270.6 - 337.2	122.2 - 137.8
220 - 255	146.0 - 167.1	345.8 - 350.7
430 - 545	224.6 - 269.9	4.0 - 14.3
40 - 315	236.2 - 329.9	175.5 - 197.5
130 - 345	207.8 - 289.4	230.1 - 249.2
2200 - 2400	231.5 - 304.1	43.1 - 60.0
0 - 110	304.1 - 346.4	60.0 - 69.9
2110 - 2220	351.9 - 34.3	240.5 - 250.4
2125 - 2205	151.7 - 175.9	85.4 - 91.1
0 - 130	245.4 - 299.8	107.4 - 120.2

16.7 MHZ NANCAY, FRANCE

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE	TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
77/12/11	0 - 345	36.1 - 172.1	311.5 - 343.1			
77/12/11	2135 - 2400	99.1 - 186.8	134.3 - 155.0			
77/12/12	0 - 340	186.8 - 319.8	155.0 - 186.4			
77/12/12	2135 - 2400	249.8 - 337.5	338.0 - 358.4			
				55 - 310	220.0 - 301.7	162.9 - 182.1
				2140 - 2250	252.8 - 295.1	338.7 - 348.6
77/12/13	0 - 335	337.5 - 107.5	358.4 - 28.6			
77/12/13	2130 - 2400	37.4 - 128.1	181.3 - 202.6			
77/12/14	0 - 430	128.1 - 291.4	202.6 - 240.9			
77/12/14	2125 - 2400	185.1 - 278.8	23.6 - 45.4			
				205 - 430	203.7 - 291.4	220.3 - 240.9
				2220 - 2400	218.4 - 278.8	31.3 - 45.4
77/12/15	0 - 325	278.8 - 42.8	45.4 - 74.4			
77/12/15	2120 - 2400	332.8 - 69.5	227.3 - 249.9			
				0 - 125	278.8 - 330.2	45.4 - 57.4
77/12/16	0 - 325	69.5 - 193.5	249.9 - 278.8			
77/12/16	2115 - 2400	120.4 - 220.2	69.3 - 92.7			
				215 - 250	151.1 - 172.3	269.0 - 273.9
				2115 - 2320	120.4 - 196.0	69.3 - 87.0
77/12/17	0 - 315	220.2 - 338.1	92.7 - 120.5			
77/12/17	2110 - 2400	268.1 - 10.9	273.1 - 297.0			
				50 - 305	250.4 - 332.3	99.8 - 119.0
				2110 - 2230	268.1 - 316.4	273.1 - 284.3
77/12/18	0 - 335	10.9 - 140.9	297.0 - 327.1			
77/12/18	2105 - 2400	55.7 - 161.5	115.4 - 140.3			
				300 - 335	119.7 - 140.9	322.2 - 327.1
77/12/19	0 - 310	161.5 - 276.4	140.3 - 167.4			
77/12/19	2100 - 2400	203.4 - 312.2	318.6 - 343.8			
77/12/20	0 - 305	312.2 - 64.1	343.8 - 9.8			
77/12/20	2055 - 2400	351.0 - 102.9	161.6 - 187.9			
77/12/21	0 - 350	102.9 - 241.9	187.9 - 220.6			
77/12/21	2055 - 2400	141.7 - 253.6	4.8 - 30.8			
				325 - 350	226.8 - 241 9	217.0 - 220.6
77/12/22	0 - 320	253.6 - 14.5	30.8 - 59.1			
77/12/22	2050 - 2400	289.3 - 44.2	208.4 - 235.3			
				25 - 320	268.7 - 14.5	34.3 - 39.1
				2145 - 2230	322.6 - 349.8	216.2 - 222.6
77/12/23	0 - 255	44.2 - 150.0	235.3 - 260.0			
77/12/25	2100 - 2400	27.4 - 136.2	100.0 - 125.6			
				2240 - 2310	87.9 - 106.0	114.2 - 118.5
77/12/26	0 - 235	136.2 - 229.9	125.6 - 147.7			
77/12/27	2025 - 2400	307.6 - 77.6	142.6 - 173.2			
				2055 - 2120	325.7 - 340.8	146.9 - 150.4
77/12/28	0 - 225	77.6 - 165.2	173.2 - 193.8			
77/12/28	2020 - 2400	95.2 - 228.2	345.3 - 16.2			

16.7 MHZ NANCAY, FRANCE

DATE YY/MM/DD	OBSERVATIONS TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE	ACTIVITY TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE
				2100 - 2400	119.4 - 228.2	350.9 - 16.2
77/12/29	0 - 300	228.2 - 337.0	16.2 - 41.6			
				35 - 300	249.4 - 337.0	21.1 - 41.6
78/ 1/ 1	2000 - 2400	325.7 - 110.8	76.7 - 110.9			
78/ 1/ 2	0 - 205	110.8 - 186.4	110.9 - 128.7			
78/ 1/ 2	2000 - 2400	116.4 - 261.5	281.0 - 314.7			
				2310 - 2400	231.2 - 261.5	307.7 - 314.7
78/ 1/ 3	0 - 200	261.5 - 334.0	314.7 - 331.5			
78/ 1/ 3	1955 - 2400	264.0 - 52.1	123.5 - 158.5			
				0 - 55	261.5 - 294.7	314.7 - 322.4
				2050 - 2145	297.2 - 330.5	131.4 - 139.2
78/ 1/ 4	0 - 200	52.1 - 124.7	158.5 - 175.5			
78/ 1/ 4	1950 - 2400	51.6 - 202.8	326.5 - 1.6			
78/ 1/ 5	0 - 225	202.8 - 290.4	1.6 - 22.0			
78/ 1/ 5	2155 - 2400	277.8 - 353.4	188.2 - 205.9			
				20 - 225	214.9 - 290.4	4.4 - 22.0
				2155 - 2220	277.8 - 292.9	188.2 - 191.8
				2235 - 2400	302.0 - 353.4	193.9 - 205.9
78/ 1/ 6	0 - 150	353.4 - 59.9	205.9 - 221.5			
78/ 1/ 6	1940 - 2400	346.8 - 144.0	12.0 - 48.7			
				0 - 55	353.4 - 26.7	205.9 - 213.7
78/ 1/ 7	0 - 145	144.0 - 207.5	48.7 - 63.5			
78/ 1/ 9	1925 - 2400	69.7 - 235.9	261.4 - 300.0			
78/ 1/10	0 - 130	235.9 - 290.3	300.0 - 312.7			
78/ 1/10	2035 - 2400	262.6 - 26.6	114.4 - 143.6			
				20 - 125	248.0 - 287.3	302.9 - 312.0
				2035 - 2140	262.6 - 301.9	114.4 - 123.7
				2155 - 2300	311.0 - 350.3	125.8 - 135.1
				2325 - 2400	5.4 - 26.6	138.6 - 143.6
78/ 1/12	1915 - 2400	155.5 - 327.8	150.6 - 191.1			
				2100 - 2315	219.0 - 300.6	165.5 - 184.7
				2340 - 2400	315.7 - 327.8	188.3 - 191.1
78/ 1/13	0 - 115	327.8 - 13.1	191.1 - 201.8			
78/ 1/13	2020 - 2400	34 .4 - 118.4	2.9 - 33.9			
				0 - 45	327.8 - 355.0	191.1 - 197.5
78/ 1/14	0 - 115	118.4 - 163.7	33.9 - 44.5			
78/ 1/14	1905 - 2400	90.7 - 269.0	196.6 - 238.4			
				2040 - 2110	148.1 - 166.2	210.1 - 214.3
				2240 - 2400	220.6 - 269.0	227.1 - 238.4
78/ 1/15	0 - 205	269.0 - 344.6	238.4 - 256.0			
78/ 1/15	1900 - 2400	238.2 - 59.6	38.6 - 81.2			
				0 - 30	269.0 - 287.2	238.4 - 242.6
				145 - 205	332.5 - 344.6	253.2 - 256.0
				1935 - 2045	259.4 - 301.7	43.6 - 73.5
78/ 1/16	0 - 135	59.6 - 117.1	81.2 - 94.7			

16.7 MdZ NANCAY, FRANCE

DATE YY/MM/DD	OBSERVATIONS TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE	ACTIVITY TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE
78/ 1/16	1855 - 2400	25.8 - 210.2	242.4 - 285.3			
				45 - 135	86.8 - 117.1	87.6 - 94.7
78/ 1/17	0 - 225	210.2 - 297.9	285.3 - 305.6			
78/ 1/17	1815 - 2400	152.2 - 0.8	79.5 - 128.7			
				20 - 225	222.3 - 297.9	288.1 - 305.6
				1815 - 1920	152.2 - 191.5	79.5 - 88.8
				1940 - 2205	203.6 - 291.3	91.6 - 112.3
				2220 - 2335	300.4 - 345.7	114.4 - 125.1
78/ 1/18	0 - 55	0.8 - 34.1	128.7 - 136.5			
78/ 1/18	1845 - 2400	321.0 - 151.4	287.9 - 332.1			
78/ 1/19	0 - 50	151.4 - 181.6	332.1 - 339.1			
78/ 1/19	1845 - 2400	111.6 - 302.0	131.3 - 176.2			
78/ 1/20	0 - 45	302.0 - 329.2	176.2 - 182.6			
78/ 1/20	1840 - 2400	259.1 - 92.6	334.0 - 19.0			
78/ 1/21	0 - 40	92.6 - 116.8	19.0 - 24.6			
78/ 1/21	1835 - 2400	46.7 - 243.2	177.4 - 223.4			
78/ 1/22	0 - 40	243.2 - 267.4	223.4 - 229.1			
78/ 1/22	1830 - 2400	194.3 - 33.8	19.5 - 66.1			
				1925 - 2115	227.5 - 294.0	27.2 - 42.8
				2200 - 2220	321.2 - 333.3	49.1 - 52.0
78/ 1/23	0 - 35	33.8 - 54.9	66.1 - 71.1			
78/ 1/23	1825 - 2400	341.8 - 184.3	223.2 - 270.4			
				2000 - 2045	39.2 - 66.4	236.6 - 243.0
78/ 1/24	0 - 30	184.3 - 202.5	270.4 - 274.6			
78/ 1/24	1825 - 1910	132.4 - 159.6	65.9 - 72.3			
78/ 1/24	1940 - 2400	177.7 - 334.9	76.6 - 113.6			
				2000 - 2025	189.8 - 204.9	79.4 - 83.0
				2105 - 2400	229.1 - 334.9	88.7 - 113.6
78/ 1/25	0 - 25	334.9 - 350.0	113.6 - 117.2			
78/ 1/25	1815 - 2235	276.9 - 74.1	268.7 - 305.2			
78/ 1/25	2305 - 2400	92.2 - 125.5	309.4 - 317.1			
78/ 1/26	0 - 20	125.5 - 137.6	317.1 - 319.9			
78/ 1/26	1850 - 2400	88.6 - 276.0	116.9 - 161.1			
				2320 - 2400	251.9 - 276.0	155.4 - 161.1
78/ 1/27	0 - 20	276.0 - 288.1	161.1 - 163.9			
78/ 1/27	1900 - 2400	245.2 - 66.6	321.8 - 3.9			
				0 - 20	276.0 - 288.1	161.1 - 163.9
				1935 - 2025	266.4 - 296.6	326.7 - 333.7
78/ 1/28	2045 - 2400	99.3 - 217.2	180.7 - 208.4			
				2135 - 2220	141.6 - 156.7	190.7 - 194.2
78/ 1/29	1800 - 2135	150.1 - 280.0	0.2 - 30.5			
78/ 1/29	2145 - 2400	286.1 - 7.7	31.9 - 51.0			
				2000 - 2135	222.6 - 280.0	17.1 - 30.5
78/ 1/30	2030 - 2400	31.3 - 158.3	225.7 - 255.3			
78/ 1/31	1830 - 2355	109.3 - 305.8	51.5 - 97.6			

16.7 MHZ NANCAY, FRANCE

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE
78/ 2/ 1	1920 - 2350	290.1 - 93.3	262.8 - 300.6
78/ 2/ 2	1920 - 2045	80.6 - 132.0	105.9 - 118.0
78/ 2/ 2	2140 - 2345	165.2 - 240.8	125.9 - 143.7
78/ 2/ 3	1945 - 2345	246.2 - 31.3	313.0 - 346.7
78/ 2/ 4	2000 - 2125	45.8 - 97.2	159.0 - 171.1
78/ 2/ 4	2200 - 2335	118.4 - 175.8	176.1 - 189.6
78/ 2/ 5	1905 - 2315	163.1 - 314.2	354.1 - 29.4
78/ 2/ 6	1845 - 2330	301.5 - 113.8	195.6 - 235.9
78/ 2/ 8	1855 - 2035	248.6 - 309.1	244.0 - 258.0
78/ 2/14	2050 - 2255	141.1 - 216.7	40.4 - 58.2
78/ 2/15	2155 - 2255	330.9 - 7.1	253.8 - 262.2
78/ 2/16	2045 - 2250	79.0 - 154.6	87.0 - 104.8
78/ 2/17	2115 - 2245	247.6 - 302.0	294.8 - 307.4
78/ 2/18	1910 - 1955	322.6 - 349.8	120.8 - 127.2
78/ 2/18	2100 - 2245	29.0 - 92.5	136.4 - 151.4
78/ 2/19	1915 - 2000	116.0 - 143.2	324.6 - 330.9
78/ 2/19	2040 - 2225	167.4 - 230.9	336.5 - 351.3
78/ 2/20	2115 - 2235	339.6 - 27.4	185.7 - 197.1
78/ 2/21	1930 - 2005	66.0 - 87.2	13.5 - 18.4
78/ 2/21	2100 - 2230	120.4 - 174.8	26.2 - 38.9
78/ 2/22	1920 - 1940	210.4 - 222.5	216.4 - 219.2
78/ 2/22	2020 - 2225	246.7 - 322.3	224.8 - 242.4
78/ 2/23	2100 - 2220	61.3 - 109.7	73.3 - 84.7
78/ 2/25	2105 - 2215	5.2 - 47.6	121.3 - 131.3
78/ 2/26	1925 - 2210	95.2 - 195.0	310.3 - 333.4
78/ 2/27	2110 - 2205	309.1 - 342.4	169.2 - 177.0
78/ 2/28	1820 - 2205	356.8 - 132.8	347.8 - 19.5

TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
1925 - 2015	142.5 - 172.8	59.3 - 66.4
2050 - 2140	193.9 - 224.2	71.3 - 78.4
2155 - 2320	233.2 - 284.6	80.6 - 92.7
1940 - 2020	92.7 - 116.9	108.8 - 114.5
1945 - 2055	246.2 - 288.6	313.0 - 322.8
2125 - 2205	306.7 - 330.9	327.0 - 332.6
1855 - 2035	248.6 - 309.1	244.0 - 258.0
2115 - 2210	247.6 - 280.9	294.8 - 302.3
2145 - 2225	206.7 - 230.9	345.7 - 351.3

16.7 MHZ ORRORAL, AUSTRALIA

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE	TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
77/10/14	1255 - 2030	47.3 - 322.3	134.1 - 198.9			
77/10/15	1250 - 2210	194.8 - 173.4	337.5 - 56.1			
77/10/16	1245 - 1330	342.4 - 9.6	180.0 - 186.4			
77/10/16	1350 - 2150	21.7 - 311.9	189.2 - 257.5			
77/10/16	2200 - 2230	317.9 - 336.0	258.9 - 263.2			
77/10/17	1455 - 2000	211.6 - 35.9	41.7 - 84.6			
77/10/18	1400 - 2000	328.9 - 186.5	238.0 - 289.0			
				1415 - 1525	338.0 - 20.3	240.1 - 250.0
77/10/19	1400 - 2030	119.5 - 355.3	80.7 - 135.9			
				1450 - 1645	149.7 - 219.2	87.7 - 104.0
77/10/20	1430 - 2205	288.2 - 203.3	289.3 - 353.3			
				1535 - 1625	327.5 - 357.7	298.5 - 305.5
				2030 - 2055	145.9 - 161.0	339.9 - 343.4
77/10/21	1600 - 2305	133.2 - 30.2	144.8 - 205.3			
				2045 - 2135	305.5 - 335.8	185.3 - 192.5
77/10/22	1525 - 2325	262.7 - 192.9	343.8 - 51.1			
				1525 - 1700	262.7 - 320.1	343.8 - 357.1
77/10/23	1330 - 2035	343.7 - 240.7	170.8 - 231.3			
				2010 - 2035	225.6 - 240.7	227.7 - 231.3
77/10/24	1210 - 1325	86.0 - 131.3	3.1 - 13.6			
77/10/24	1525 - 1945	205.9 - 1.1	30.4 - 66.9			
				1645 - 1745	252.2 - 288.5	41.6 - 50.1
77/10/25	1545 - 2040	6.6 - 184.9	237.3 - 279.1			
				1945 - 2040	151.7 - 184.9	271.3 - 279.1
77/10/26	1425 - 1535	108.8 - 151.1	68.7 - 78.6			
77/10/26	1550 - 2135	160.2 - 8.8	80.7 - 129.6			
				1830 - 1905	256.9 - 278.1	103.3 - 108.3
				1950 - 2025	305.3 - 326.5	114.7 - 119.6
77/10/27	1205 - 1305	174.8 - 211.1	253.3 - 261.8			
77/10/27	1435 - 2255	265.5 - 207.8	274.5 - 344.9			
				1435 - 1645	265.5 - 344.1	274.5 - 292.9
77/10/28	1240 - 2245	346.6 - 352.3	100.9 - 186.9			
				1930 - 2045	234.4 - 279.8	159.1 - 169.8
77/10/29	1300 - 1600	149.3 - 258.1	308.1 - 333.3			
77/10/29	1620 - 2235	270.2 - 136.9	336.1 - 28.7			
				1515 - 1600	230.9 - 258.1	327.0 - 333.3
				1620 - 1700	270.2 - 294.4	336.1 - 341.8
77/10/30	1505 - 1845	15.5 - 148.5	168.8 - 200.1			
77/10/30	1910 - 1950	163.6 - 187.8	203.7 - 209.4			
77/10/30	2010 - 2105	199.9 - 233.1	212.2 - 220.1			
77/10/31	1455 - 2020	160.0 - 356.5	10.9 - 56.5			
				1635 - 1800	220.5 - 271.9	24.9 - 36.9
				1835 - 1925	293.0 - 323.3	41.8 - 48.8
77/11/ 1	1400 - 1500	277.4 - 313.7	207.0 - 215.5			
77/11/ 1	1540 - 2020	337.9 - 147.2	221.2 - 260.9			

16.7 MHZ ORRORAL, AUSTRALIA

DATE YY/MM/DD	OBSERVATIONS TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE	ACTIVITY TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE
77/11/ 2	1605 - 2035	143.6 - 306.9	67.5 - 105.7	1720 - 1800	38.3 - 62.5	235.4 - 241.1
				1910 - 2035	255.5 - 306.9	93.6 - 105.7
77/11/ 3	1520 - 1945	267.0 - 67.3	265.6 - 303.0	1600 - 1620	291.2 - 303.3	271.2 - 274.1
77/11/ 4	1700 - 1725	118.1 - 133.2	122.4 - 126.0			
77/11/ 4	1735 - 1945	139.3 - 217.9	127.4 - 145.9			
77/11/ 5	1645 - 1925	259.7 - 356.4	324.5 - 346.9			
				1710 - 1750	274.8 - 299.0	328.0 - 333.6
				1820 - 1845	317.1 - 332.3	337.8 - 341.3
77/11/ 6	1745 - 2005	86.6 - 171.3	176.3 - 196.2			
77/11/ 7	1635 - 2020	194.9 - 331.0	9.8 - 41.4			
				1720 - 2020	222.1 - 331.0	16.1 - 41.4
77/11/ 8	1635 - 1950	345.6 - 103.5	213.8 - 241.5			
77/11/ 9	1540 - 2130	103.0 - 314.6	48.9 - 98.3			
77/11/10	1525 - 1905	244.6 - 17.6	251.1 - 282.2			
				1525 - 1600	244.6 - 265.7	251.1 - 256.1
77/11/11	1505 - 2135	23.1 - 258.9	91.0 - 146.4			
				1645 - 1745	83.6 - 119.8	105.1 - 113.6
77/11/12	1535 - 2145	191.9 - 55.6	299.6 - 351.5			
				1620 - 1635	219.1 - 228.2	305.9 - 308.0
77/11/13	1550 - 1930	351.6 - 124.6	144.7 - 176.1			
77/11/13	1945 - 2040	133.7 - 167.0	178.2 - 186.0			
77/11/14	1515 - 2125	121.1 - 344.8	343.6 - 35.5			
				1950 - 2025	287.4 - 308.6	22.1 - 27.1
77/11/15	1550 - 2005	292.9 - 87.1	192.2 - 228.5			
77/11/16	1635 - 2120	110.8 - 283.1	41.6 - 81.8			
77/11/17	1640 - 1940	264.5 - 13.3	246.7 - 272.2			
				1720 - 1740	288.7 - 300.8	252.4 - 255.2
77/11/18	1555 - 1630	28.0 - 49.1	83.0 - 88.0			
77/11/18	1650 - 2135	61.2 - 233.5	90.8 - 131.3			
77/11/19	1610 - 1915	187.7 - 299.5	289.6 - 315.6			
				1705 - 1840	220.9 - 278.4	297.3 - 310.7
77/11/20	1625 - 2130	347.4 - 171.8	134.7 - 178.1			
77/11/21	1700 - 1950	159.3 - 262.0	343.4 - 7.3			
77/11/22	1505 - 1645	240.4 - 300.9	170.8 - 185.1			
77/11/23	1735 - 2000	121.8 - 209.4	35.2 - 55.6			
77/11/24	1635 - 1910	236.2 - 329.9	231.1 - 253.0			
77/11/25	1455 - 2100	326.4 - 187.1	59.7 - 111.4			
				1830 - 1955	96.4 - 147.8	90.1 - 102.1
77/11/26	1640 - 2045	180.5 - 328.7	279.0 - 313.4	1845 - 1925	256.1 - 280.3	296.6 - 302.2
77/11/27	1800 - 1820	19.6 - 31.7	133.3 - 136.1			
77/11/27	1900 - 1945	55.9 - 83.1	141.8 - 148.2			
77/11/28	1540 - 1615	85.6 - 106.8	317.5 - 322.4			

16.7 MHZ ORRORAL, AUSTRALIA

DATE YY/MM/DD	OBSERVATIONS TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE	ACTIVITY TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE
77/11/28	1640 - 2040	121.9 - 267.0	325.9 - 359.6			
				1925 - 2005	221.6 - 245.8	349.0 - 354.6
77/11/29	1635 - 1825	269.5 - 336.0	168.8 - 184.4			
77/11/29	1905 - 1950	0.2 - 27.4	190.1 - 196.5			
				1635 - 1750	269.5 - 314.9	168.8 - 179.4
77/11/30	1520 - 2000	14.9 - 184.2	1.5 - 40.9			
77/12/ 1	1530 - 1625	171.6 - 204.8	207.1 - 214.9			
77/12/ 1	1650 - 1720	220.0 - 238.1	218.4 - 222.7			
77/12/ 1	1730 - 1955	244.2 - 331.8	224.1 - 244.6			
				1805 - 1940	265.3 - 322.8	229.1 - 242.5
77/12/ 2	1630 - 2025	358.6 - 140.6	58.3 - 91.6			
				1910 - 1940	95.3 - 113.4	81.0 - 85.2
77/12/ 3	925 - 1010	252.3 - 279.5	202.6 - 209.0			
77/12/ 3	1020 - 1145	283.5 - 336.9	210.5 - 222.5			
77/12/ 3	1200 - 2015	346.0 - 285.3	224.7 - 294.5			
				1830 - 1920	221.8 - 252.0	279.8 - 286.8
77/12/ 4	1525 - 2010	260.6 - 72.9	96.4 - 137.0			
				1615 - 1735	290.8 - 339.2	103.5 - 114.9
77/12/ 5	1535 - 2005	57.3 - 220.6	302.1 - 340.0			
77/12/ 6	1430 - 1855	168.7 - 329.0	136.1 - 173.9			
77/12/ 9	1755 - 1925	24.7 - 79.1	55.7 - 68.4			
77/12/10	1730 - 1925	160.3 - 229.8	256.7 - 272.9			
77/12/11	1820 - 1945	341.2 - 32.6	106.6 - 118.7			
77/12/12	1605 - 1925	50.3 - 171.2	291.7 - 319.8			
77/12/14	1805 - 1940	64.2 - 121.6	355.5 - 8.8			
77/12/15	1845 - 1940	239.0 - 272.3	205.3 - 213.1			
77/12/16	1720 - 2030	338.3 - 93.2	36.1 - 63.0			
77/12/17	1000 - 1220	223.0 - 307.6	178.2 - 198.1			
77/12/17	1620 - 1725	92.7 - 132.0	232.1 - 241.3			
77/12/17	1750 - 2025	147.1 - 240.9	244.9 - 266.7			
77/12/18	1715 - 2025	276.7 - 31.5	82.7 - 109.7			
77/12/19	1800 - 2020	94.5 - 179.2	293.3 - 313.0			
77/12/20	1755 - 2015	242.2 - 326.8	135.9 - 155.9			
77/12/21	1800 - 2030	35.9 - 126.6	340.2 - 1.3			
				1820 - 1840	48.0 - 60.1	343.0 - 345.8
				2020 - 2030	120.5 - 126.6	359.9 - 1.3
77/12/22	1730 - 2000	168.4 - 259.1	180.0 - 201.3			
77/12/23	1700 - 1740	300.9 - 325.1	18.7 - 24.3			
77/12/23	1750 - 1820	331.2 - 349.3	25.8 - 30.0			
77/12/24	1645 - 1820	82.5 - 140.0	221.0 - 234.5			
77/12/25	1055 - 1125	21.6 - 39.7	14.4 - 18.6			
77/12/25	1520 - 1810	181.8 - 284.6	51.7 - 75.8			
77/12/26	1725 - 1810	48.1 - 75.3	273.8 - 280.2			
77/12/27	1800 - 2000	219.9 - 292.4	121.9 - 139.0			
77/12/28	1635 - 1755	319.2 - 7.5	313.7 - 325.0			

16.7 MHZ ORRORAL, AUSTRALIA

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE	TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
77/12/30	1715 - 1825	284.7 - 327.0	6.2 - 16.1			
78/ 1/ 2	1655 - 1810	4.5 - 49.9	255.0 - 265.6			
				1730 - 1750	25.7 - 37.8	259.9 - 262.7
78/ 1/ 5	1450 - 1815	20.9 - 144.8	127.7 - 156.9			
78/ 1/ 9	1700 - 1750	342.0 - 12.2	241.0 - 248.0			
78/ 1/10	1600 - 1745	96.3 - 159.8	75.3 - 90.2			
				1650 - 1710	126.6 - 138.7	82. - 85.2
78/ 3/ 1	305 - 420	314.2 - 359.5	62.1 - 72.8			
78/ 3/ 2	300 - 355	101.6 - 134.8	265.2 - 272.9			
78/ 3/ 2	415 - 435	146.9 - 159.0	275.7 - 278.5			
78/ 3/ 3	300 - 345	252.0 - 279.2	108.6 - 115.0			
78/ 3/ 3	405 - 420	291.3 - 300.3	117.9 - 120.0			
78/ 3/ 4	255 - 355	39.4 - 75.6	311.0 - 319.4			
78/ 3/ 4	600 - 635	151.2 - 172.4	337.0 - 341.9			
78/ 3/ 5	250 - 435	186.8 - 250.2	154.4 - 169.3			
78/ 3/ 6	310 - 405	349.3 - 22.5	359.8 - 7.6			

22.2 MHZ GODDARD SPACE FLIGHT CENTER

DATE YY/MM/DD	OBSERVATIONS TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	OBSERVATIONS IO PHASE	ACTIVITY TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	ACTIVITY IO PHASE
77/ 6/29	950 - 1555	38.3 - 258.9	310.3 - 2.1			
77/ 6/30	945 - 1550	185.6 - 46.2	152.4 - 203.8			
77/ 7/ 1	945 - 1415	335.9 - 139.1	356.4 - 34.5			
77/ 7/ 1	1435 - 1550	151.2 - 196.5	37.3 - 47.9			
				1300 - 1415	93.8 - 139.1	24.0 - 34.5
				1435 - 1515	151.2 - 175.4	37.3 - 43.0
77/ 7/ 2	940 - 1545	123.2 - 343.8	198.1 - 249.8			
77/ 7/ 3	935 - 1525	270.5 - 122.1	41.5 - 90.6			
77/ 7/ 4	935 - 1215	60.9 - 157.6	244.1 - 266.8			
77/ 7/ 4	1240 - 1420	172.7 - 233.1	270.4 - 284.6			
77/ 7/ 4	1500 - 1540	257.3 - 281.5	290.3 - 296.0			
77/ 7/ 5	930 - 1230	208.2 - 317.0	87.1 - 112.3			
77/ 7/ 5	1245 - 1430	326.1 - 29.5	114.4 - 129.1			
77/ 7/ 5	1505 - 1535	50.7 - 68.8	134.0 - 138.2			
77/ 7/ 6	930 - 1220	358.5 - 101.3	290.3 - 314.5			
77/ 7/ 7	925 - 1230	145.9 - 257.7	132.5 - 158.5			
77/ 7/ 8	920 - 1215	293.2 - 39.0	335.7 - 0.5			
77/ 7/ 9	920 - 1145	83.5 - 171.2	178.2 - 198.7			
77/ 7/ 9	1205 - 1450	183.3 - 283.0	201.5 - 224.9			
				1305 - 1415	219.5 - 261.8	210.0 - 219.9
77/ 7/10	915 - 1520	230.9 - 91.5	21.7 - 72.9			
				1050 - 1115	288.3 - 303.4	35.0 - 38.5
77/ 7/11	915 - 1145	21.2 - 111.9	224.1 - 245.4			
77/ 7/12	910 - 1515	168.5 - 29.1	67.3 - 118.4			
				1045 - 1120	226.0 - 247.1	80.6 - 85.5
77/ 7/14	905 - 1230	106.2 - 230.1	112.8 - 141.5			
77/ 7/15	900 - 1445	253.6 - 102.1	315.8 - 4.7			
77/ 7/16	900 - 1500	43.9 - 261.5	158.3 - 209.2			
77/ 7/17	855 - 1500	191.3 - 51.9	1.8 - 53.2			
77/ 7/20	1150 - 1455	28.1 - 139.9	276.0 - 302.3			
77/ 7/21	845 - 1450	66.7 - 287.3	93.0 - 144.2			
77/ 7/23	835 - 1440	1.4 - 222.0	137.9 - 189.3			
77/ 7/24	835 - 1440	151.7 - 12.3	342.0 - 33.4			
77/ 7/25	830 - 1435	299.1 - 159.7	183.7 - 235.5			
77/ 7/26	830 - 1120	89.5 - 192.2	27.8 - 51.7			
77/ 7/26	1135 - 1230	201.3 - 234.5	53.8 - 61.5			
77/ 7/26	1240 - 1315	240.6 - 261.7	62.9 - 67.8			
77/ 7/26	1330 - 1435	270.8 - 310.1	69.9 - 79.0			
77/ 7/27	825 - 1220	236.8 - 18.9	229.8 - 263.2			
77/ 7/28	900 - 1230	48.4 - 175.3	78.3 - 107.7			
77/ 7/28	1235 - 1255	178.3 - 190.4	108.4 - 111.2			
77/ 7/28	1305 - 1425	196.4 - 244.8	112.6 - 123.8			
				1045 - 1115	111.8 - 130.0	93.0 - 97.2
77/ 7/29	820 - 1135	174.6 - 292.4	276.0 - 303.8			
				1100 - 1130	271.3 - 289.4	298.8 - 303.1

22.2 MHZ GODDARD SPACE FLIGHT CENTER

DATE YY/MM/DD	OBSERVATIONS TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	OBSERVATIONS IO PHASE	ACTIVITY TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	ACTIVITY IO PHASE
77/ 8/10	740 - 1120	155.1 - 288.1	189.6 - 220.8			
77/ 8/11	740 - 1345	305.5 - 166.2	33.5 - 84.6			
				1315 - 1345	148.0 - 166.2	80.4 - 84.6
77/ 8/12	735 - 1045	92.9 - 207.8	235.8 - 262.8			
77/ 8/12	1200 - 1340	253.1 - 313.5	273.5 - 287.7			
77/ 8/13	730 - 1005	240.3 - 334.0	76.4 - 100.1			
				935 - 1000	315.9 - 331.0	95.9 - 99.4
77/ 8/14	730 - 1335	30.7 - 251.3	282.1 - 333.8			
77/ 8/15	725 - 1330	178.1 - 38.7	124.0 - 175.5			
77/ 8/16	725 - 1325	328.5 - 186.1	328.2 - 18.9			
77/ 8/17	720 - 925	115.9 - 191.5	169.9 - 187.7			
77/ 8/17	940 - 1325	200.6 - 336.6	189.8 - 221.8			
77/ 8/18	715 - 1320	263.3 - 124.0	13.3 - 64.5			
77/ 8/19	715 - 1155	53.8 - 223.0	216.1 - 256.0			
77/ 8/20	710 - 1315	201.2 - 61.8	58.9 - 110.1			
77/ 8/21	705 - 1310	348.6 - 209.2	261.8 - 313.6			
77/ 8/22	705 - 1310	139.0 - 359.6	104.6 - 156.0			
77/ 8/23	705 - 1310	289.4 - 150.1	308.7 - 0.2			
77/ 8/24	655 - 1300	73.8 - 294.5	149.7 - 201.5			
77/ 8/25	655 - 1300	224.3 - 64.9	353.9 - 45.1			
77/ 8/26	650 - 1255	11.7 - 232.3	195.9 - 247.8			
77/ 8/27	650 - 1250	162.1 - 19.8	39.6 - 90.1			
77/ 9/14	550 - 1150	314.3 - 171.9	91.2 - 142.0			
77/ 9/16	540 - 1145	249.2 - 109.9	136.5 - 188.3			
77/ 9/18	535 - 1140	187.2 - 47.9	182.8 - 234.8			
77/ 9/19	530 - 1135	334.7 - 195.4	25.8 - 77.0			
				1020 - 1040	150.0 - 162.1	66.5 - 69.3
77/ 9/20	525 - 1130	122.2 - 342.8	228.6 - 280.5			
				720 - 745	191.7 - 206.8	245.0 - 248.5
				820 - 830	228.0 - 234.0	253.5 - 254.9
				845 - 900	243.1 - 252.2	257.0 - 259.2
77/ 9/21	525 - 1130	272.7 - 133.3	71.6 - 123.0			
77/ 9/22	520 - 1125	60.2 - 280.8	275.0 - 326.5			
77/ 9/24	515 - 1115	358.2 - 215.8	321.1 - 11.7			
77/ 9/25	510 - 1115	145.7 - 6.3	163.1 - 215.0			
				745 - 825	239.4 - 263.6	185.1 - 190.8
77/ 9/26	505 - 1110	293.2 - 153.9	6.3 - 57.4			
77/ 9/27	500 - 1105	80.7 - 301.4	208.8 - 260.8			
				810 - 1015	195.6 - 271.1	235.9 - 253.7
77/ 9/28	500 - 1100	231.2 - 88.9	52.0 - 102.6			
77/ 9/29	455 - 1100	18.7 - 239.4	255.3 - 307.0			
77/ 9/30	450 - 1055	166.3 - 26.9	97.2 - 148.9			
				700 - 730	244.8 - 263.0	115.6 - 119.8
77/10/ 1	450 - 1055	316.8 - 177.4	301.6 - 352.9			
77/10/ 2	445 - 1050	104.3 - 325.0	143.4 - 195.4			

22.2 MHZ GODDARD SPACE FLIGHT CENTER

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE	TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
				845 - 920	249.4 - 270.6	177.6 - 182.5
77/10/ 3	440 - 625	251.8 - 315.3	346.8 - 1.6			
				610 - 620	306.2 - 312.3	359.4 - 0.9
77/10/ 4	435 - 1040	39.4 - 260.0	189.2 - 241.2			
				920 - 930	211.6 - 217.7	229.8 - 231.2
				955 - 1020	232.8 - 247.9	234.8 - 238.3
77/10/ 5	435 - 1040	189.9 - 50.6	32.6 - 83.9			
77/10/ 6	425 - 1030	334.4 - 195.1	235.1 - 286.8			
77/10/ 7	425 - 1030	125.0 - 345.6	77.8 - 129.4			
				440 - 605	134.0 - 185.4	79.9 - 91.9
77/10/ 8	420 - 1025	272.5 - 133.2	281.4 - 332.9			
77/10/ 9	420 - 1025	63.1 - 283.7	124.0 - 175.8			
77/10/10	410 - 1015	207.6 - 68.2	326.8 - 18.0			
77/10/11	410 - 1015	358.1 - 218.8	169.7 - 221.7			
77/10/12	405 - 1010	145.7 - 6.4	12.7 - 63.9			
77/10/13	405 - 1010	296.3 - 156.9	216.4 - 268.2			
77/10/14	400 - 1005	83.8 - 304.5	58.6 - 110.0			
				535 - 600	141.2 - 156.4	71.9 - 75.5
77/10/15	500 - 1000	270.7 - 92.0	271.3 - 313.7			
77/10/16	350 - 955	18.9 - 239.6	104.0 - 155.8			
77/10/17	350 - 350	169.5 - 242.1	308.4 - 325.2			
77/10/17	725 - 950	299.5 - 27.2	338.6 - 358.9			
77/10/18	345 - 950	317.1 - 177.7	150.4 - 202.4			
77/10/19	340 - 945	104.6 - 325.3	353.6 - 44.8			
77/10/20	335 - 940	252.2 - 112.9	196.4 - 248.3			
77/10/21	335 - 935	42.8 - 260.5	39.5 - 90.2			
				610 - 650	136.5 - 160.7	61.3 - 66.9
77/10/26	315 - 940	63.7 - 296.5	334.7 - 28.7			
				810 - 835	242.1 - 257.2	16.0 - 19.6
				930 - 940	290.5 - 296.5	27.3 - 28.7
77/10/27	310 - 915	211.3 - 72.0	177.2 - 229.2			
				350 - 520	235.5 - 289.9	182.9 - 195.8
77/10/28	305 - 910	358.9 - 219.6	19.9 - 71.2			
77/10/29	300 - 905	146.5 - 7.2	223.2 - 274.9			
				520 - 620	231.1 - 267.4	243.1 - 251.6
77/10/30	300 - 905	297.1 - 157.8	66.0 - 117.6			
77/10/31	255 - 900	84.7 - 305.4	269.7 - 321.1			
77/11/ 1	250 - 855	232.3 - 93.0	111.6 - 163.5			
77/11/ 2	245 - 945	19.9 - 273.9	315.2 - 14.1			
				915 - 945	255.7 - 273.9	9.9 - 14.1
77/11/ 3	240 - 845	167.5 - 28.2	157.6 - 209.5			
				535 - 600	273.3 - 288.5	182.5 - 186.1
77/11/ 4	235 - 840	315.1 - 175.8	0.5 - 51.7			
77/11/ 5	235 - 835	105.8 - 323.4	204.3 - 255.4			
				540 - 700	217.6 - 266.0	230.6 - 242.0

22.2 MHZ GODDARD SPACE FLIGHT CENTER

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE	TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
77/11/ 6	230 - 835	253.4 - 114.1	46.6 - 98.1			
77/11/ 7	225 - 825	41.0 - 258.7	250.2 - 301.0			
				740 - 825	231.5 - 258.7	294.7 - 301.0
77/11/ 8	250 - 825	206.8 - 49.3	96.4 - 144.0			
				320 - 415	224.9 - 238.2	100.6 - 108.4
77/11/ 9	215 - 820	336.3 - 196.9	295.8 - 347.1			
77/11/10	215 - 820	126.9 - 347.6	138.8 - 190.7			
77/11/11	510 - 1110	23.4 - 241.0	7.2 - 57.8			
77/11/12	505 - 1110	171.0 - 31.7	210.5 - 262.2			
				900 - 950	313.1 - 343.3	243.8 - 250.9
77/11/13	500 - 1105	318.6 - 179.3	52.6 - 104.2			
				850 - 1000	97.7 - 140.0	85.1 - 95.0
77/11/14	455 - 1100	106.3 - 326.9	256.3 - 307.8			
77/11/15	445 - 1055	250.9 - 114.6	97.6 - 150.2			
				445 - 515	250.9 - 269.0	97.6 - 101.8
77/11/16	445 - 1050	41.5 - 262.2	301.9 - 353.2			
77/11/17	445 - 1045	192.2 - 49.9	145.0 - 196.3			
				625 - 645	252.6 - 264.7	159.3 - 162.1
77/11/18	440 - 1045	339.6 - 200.5	348.0 - 39.3			
77/11/19	435 - 1040	127.5 - 348.2	191.1 - 243.0			
				650 - 825	209.1 - 266.5	210.3 - 223.8
				1005 - 1015	327.0 - 333.0	238.0 - 239.4
77/11/20	430 - 1130	275.1 - 169.1	33.5 - 92.7			
				1040 - 1130	138.8 - 169.1	85.7 - 92.7
77/11/21	425 - 730	62.8 - 174.6	237.1 - 263.3			
77/11/22	420 - 1025	210.4 - 71.1	79.1 - 130.9			
77/11/23	415 - 1020	358.1 - 218.7	282.9 - 334.1			
77/11/24	415 - 1020	148.7 - 9.4	125.8 - 177.8			
77/11/25	410 - 1015	296.4 - 157.1	329.0 - 20.3			
77/11/26	405 - 640	84.0 - 177.7	171.9 - 194.0			
77/11/26	655 - 1010	186.8 - 304.7	196.1 - 223.8			
				535 - 600	138.4 - 153.6	184.7 - 188.3
77/11/27	400 - 1005	231.7 - 92.4	14.5 - 65.9			
77/11/28	455 - 1000	55.6 - 240.0	226.5 - 269.7			
77/11/29	350 - 955	167.0 - 27.7	60.1 - 111.8			
				720 - 755	294.0 - 315.1	89.8 - 94.7
77/11/30	345 - 950	314.6 - 175.3	263.9 - 315.2			
77/12/ 1	340 - 945	102.3 - 323.0	105.9 - 157.9			
77/12/ 2	340 - 940	253.0 - 110.7	310.1 - 0.6			
77/12/ 3	335 - 935	40.6 - 258.3	152.8 - 204.1			
				810 - 920	206.9 - 249.2	192.0 - 201.9
77/12/ 4	330 - 935	188.3 - 49.0	355.6 - 46.9			
				345 - 405	197.4 - 209.5	357.7 - 0.5
				440 - 600	230.6 - 279.0	5.4 - 16.6
77/12/ 5	325 - 930	336.0 - 196.6	199.0 - 250.7			

22.2 MHZ GODDARD SPACE FLIGHT CENTER

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE
77/12/ 6	320 - 925	123.6 - 344.3	41.1 - 92.8
77/12/ 7	240 - 920	250.1 - 132.0	240.0 - 296.4
77/12/ 8	310 - 915	58.9 - 279.6	86.9 - 138.9
77/12/ 9	305 - 910	206.6 - 67.3	290.6 - 341.8
77/12/10	300 - 905	354.3 - 214.9	133.0 - 185.1
77/12/11	300 - 900	144.9 - 2.6	336.8 - 27.3
77/12/12	255 - 900	292.6 - 153.3	180.0 - 231.8
77/12/13	250 - 855	80.2 - 300.9	22.3 - 73.8
77/12/14	235 - 850	221.9 - 88.6	224.6 - 277.5
77/12/15	240 - 815	15.6 - 218.1	68.0 - 115.6
77/12/16	235 - 840	163.2 - 23.9	271.8 - 323.1
77/12/17	230 - 835	310.9 - 171.6	114.1 - 166.1
77/12/18	225 - 545	98.5 - 219.5	317.3 - 345.4
77/12/18	620 - 725	240.6 - 279.9	350.3 - 359.4
77/12/19	245 - 825	261.3 - 106.9	163.8 - 212.2
77/12/20	215 - 815	33.8 - 251.5	2.8 - 53.5
77/12/21	215 - 815	184.5 - 42.2	207.1 - 258.0
77/12/22	210 - 815	332.2 - 192.8	49.2 - 100.9
77/12/23	200 - 420	116.8 - 201.4	252.3 - 272.0
77/12/24	155 - 800	264.4 - 125.1	94.4 - 146.4
77/12/25	150 - 755	52.1 - 272.8	297.9 - 349.1
77/12/26	145 - 750	199.7 - 60.4	140.6 - 192.5
77/12/27	140 - 745	347.4 - 208.0	343.3 - 34.7
77/12/28	135 - 740	135.0 - 355.7	186.7 - 238.5
77/12/29	130 - 735	282.6 - 143.3	28.9 - 80.5
77/12/30	125 - 730	70.3 - 291.0	232.7 - 284.1
77/12/31	125 - 725	220.9 - 78.6	75.4 - 126.7

TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
610 - 705	226.4 - 259.7	65.1 - 72.9
240 - 310	250.1 - 268.3	240.0 - 244.2
435 - 505	202.4 - 220.5	350.1 - 354.3
235 - 505	221.9 - 312.6	224.6 - 245.8
515 - 605	109.3 - 139.5	90.0 - 97.1
850 - 915	239.3 - 254.4	120.6 - 124.1
435 - 520	235.8 - 263.0	288.7 - 295.0
605 - 620	290.2 - 299.3	301.3 - 303.4
320 - 415	282.5 - 315.7	168.8 - 176.6
320 - 620	223.8 - 332.6	216.3 - 241.8
640 - 650	344.7 - 350.8	244.6 - 246.0
555 - 805	108.2 - 186.8	81.0 - 99.5
430 - 510	299.5 - 323.7	164.1 - 169.8
330 - 500	204.5 - 258.9	203.1 - 215.8
615 - 700	304.3 - 331.5	226.5 - 232.8
130 - 210	282.6 - 306.8	28.9 - 34.5
555 - 620	233.5 - 248.6	270.8 - 274.3
200 - 235	242.1 - 263.2	80.4 - 85.4

22.2 MHZ GODDARD SPACE FLIGHT CENTER

OBSERVATIONS

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE
78/ 1/ 1	120 - 720	8.6 - 226.2	279.1 - 329.6
78/ 1/ 2	115 - 720	156.2 - 16.9	121.5 - 173.5
78/ 1/ 3	105 - 710	300.8 - 161.5	323.8 - 15.1
78/ 1/ 4	105 - 710	91.4 - 312.1	167.7 - 219.6
78/ 1/ 5	55 - 705	236.0 - 99.7	9.3 - 61.6
78/ 1/ 6	55 - 700	26.7 - 247.3	213.7 - 265.3
78/ 1/ 7	50 - 655	174.3 - 35.0	55.7 - 107.6
78/ 1/ 8	45 - 650	321.9 - 182.6	259.5 - 310.7
78/ 1/10	40 - 640	260.1 - 117.8	305.7 - 356.2
78/ 1/11	35 - 640	47.7 - 268.4	148.6 - 200.5
78/ 1/12	30 - 635	195.3 - 56.0	351.1 - 42.5
78/ 1/13	25 - 630	342.9 - 203.6	194.7 - 246.3
78/ 1/14	20 - 125	130.5 - 169.8	36.7 - 45.9
78/ 1/14	250 - 625	221.2 - 351.2	57.9 - 88.4
78/ 1/15	15 - 620	278.1 - 138.8	240.5 - 291.8
78/ 1/16	10 - 615	65.7 - 286.3	82.6 - 134.6
78/ 1/17	5 - 610	213.2 - 73.9	286.0 - 337.2
78/ 1/18	50 - 635	31.1 - 239.6	135.8 - 184.9
78/ 1/19	0 - 605	151.4 - 12.1	332.1 - 23.4
78/ 1/20	0 - 50	302.0 - 332.2	176.2 - 183.3
78/ 1/20	55 - 115	335.3 - 347.4	184.0 - 186.8
78/ 1/20	140 - 600	2.5 - 159.7	190.4 - 227.2
78/ 1/21	0 - 555	92.6 - 307.2	19.0 - 69.2
78/ 1/21	2345 - 2400	234.1 - 243.2	221.3 - 223.4
78/ 1/22	0 - 550	243.2 - 94.8	223.4 - 272.7
78/ 1/22	2240 - 2400	345.4 - 33.8	54.8 - 66.1
78/ 1/23	0 - 545	33.8 - 242.3	66.1 - 115.2
78/ 1/23	2335 - 2400	169.2 - 184.3	266.9 - 270.4

ACTIVITY

TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE
520 - 530	153.7 - 159.7	312.8 - 314.2
345 - 420	246.9 - 268.0	142.9 - 147.9
455 - 545	230.5 - 260.7	200.4 - 207.5
55 - 155	236.0 - 272.3	9.3 - 17.8
255 - 305	249.8 - 255.9	73.5 - 74.9
535 - 600	137.2 - 152.3	300.2 - 303.7
325 - 400	242.3 - 263.5	62.9 - 67.8
110 - 220	101.9 - 144.3	91.1 - 101.1
440 - 555	228.9 - 274.2	121.0 - 131.7
50 - 150	240.5 - 276.7	292.3 - 300.7
605 - 635	221.5 - 239.6	180.6 - 184.9
200 - 220	224.0 - 236.1	348.9 - 351.7
405 - 420	240.7 - 249.8	53.6 - 55.7
10 - 45	249.2 - 270.4	224.8 - 229.8
110 - 245	285.5 - 342.9	233.3 - 246.7
135 - 325	91.2 - 157.7	79.6 - 95.3
345 - 430	169.8 - 197.0	98.1 - 104.6

22.2 MHZ GODDARD SPACE FLIGHT CENTER

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE	TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
78/ 1/24	0 - 540	184.3 - 29.9	270.4 - 318.1			
78/ 1/24	2335 - 2400	319.8 - 334.9	110.0 - 113.6			
				135 - 155	241.8 - 253.9	283.7 - 286.5
78/ 1/25	0 - 535	334.9 - 177.4	113.6 - 161.3			
78/ 1/25	2330 - 2400	107.3 - 125.5	312.9 - 317.1			
78/ 1/26	0 - 330	125.5 - 252.4	317.1 - 346.6			
78/ 1/26	345 - 530	261.5 - 325.0	348.7 - 3.5			
78/ 1/26	2325 - 2430	254.9 - 276.0	156.1 - 161.1			
78/ 1/27	0 - 530	276.0 - 115.5	161.1 - 207.9			
78/ 1/27	2320 - 2400	42.4 - 66.6	358.3 - 3.9			
78/ 1/28	0 - 525	66.6 - 263.1	3.9 - 49.8			
78/ 1/28	2315 - 2400	189.9 - 217.2	202.0 - 208.4			
78/ 1/29	0 - 520	217.2 - 50.6	208.4 - 253.5			
78/ 1/29	2310 - 2400	337.5 - 7.7	43.9 - 51.0			
				0 - 125	217.2 - 268.5	208.4 - 220.4
				220 - 325	301.8 - 341.1	228.1 - 237.3
78/ 1/30	0 - 515	7.7 - 198.1	51.0 - 95.8			
78/ 1/30	2305 - 2400	125.0 - 158.3	247.6 - 255.3			
				340 - 430	140.7 - 170.9	82.3 - 89.4
78/ 1/31	0 - 510	158.3 - 345.7	255.3 - 298.8			
78/ 1/31	2340 - 2400	296.7 - 308.8	95.5 - 98.4			
78/ 2/ 1	0 - 505	308.8 - 133.2	98.4 - 141.8			
78/ 2/ 1	2300 - 2350	63.1 - 93.3	293.6 - 300.6			
78/ 2/ 2	5 - 505	102.4 - 283.7	302.7 - 344.8			
78/ 2/ 2	2300 - 2400	213.6 - 249.9	137.3 - 145.8			
78/ 2/ 3	0 - 500	249.9 - 71.2	145.8 - 188.4			
78/ 2/ 3	2310 - 2400	10.2 - 40.4	341.7 - 348.8			
78/ 2/ 4	0 - 455	40.4 - 218.7	348.8 - 30.4			
78/ 2/ 4	2250 - 2320	148.6 - 166.7	183.2 - 187.4			
78/ 2/ 4	2335 - 2400	175.8 - 190.9	189.6 - 193.1			
				2350 - 2400	184.9 - 190.9	191.7 - 193.1
78/ 2/ 5	0 - 450	190.9 - 6.2	193.1 - 234.1			
				0 - 105	190.9 - 230.2	193.1 - 202.3
				345 - 400	326.9 - 336.0	224.9 - 227.0
78/ 2/ 6	0 - 445	341.4 - 153.7	35.7 - 76.2			
78/ 2/ 6	2325 - 2400	110.8 - 132.0	235.2 - 240.1			
				315 - 410	99.3 - 132.6	63.4 - 71.2
78/ 2/ 7	10 - 440	138.0 - 301.2	241.5 - 279.4			
78/ 2/ 7	2320 - 2400	258.3 - 282.5	77.3 - 83.0			
78/ 2/ 8	0 - 25	282.5 - 297.6	83.0 - 86.5			
78/ 2/ 8	35 - 440	303.6 - 91.7	87.9 - 122.8			
78/ 2/ 8	2310 - 2400	42.8 - 73.0	279.8 - 286.8			
78/ 2/ 9	0 - 30	73.0 - 91.1	286.8 - 291.0			
78/ 2/ 9	40 - 435	97.2 - 239.2	292.4 - 325.3			
78/ 2/ 9	2345 - 2400	214.4 - 223.5	128.2 - 130.4			

22.2 MHZ GODDARD SPACE FLIGHT CENTER

DATE YY/MM/DD	OBSERVATIONS TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	OBSERVATIONS IO PHASE	ACTIVITY TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	ACTIVITY IO PHASE
78/ 2/10	0 - 430	223.5 - 26.7	130.4 - 168.8			
78/ 2/10	2325 - 2400	352.8 - 14.0	328.5 - 333.4			
				45 - 110	250.7 - 265.8	136.8 - 140.3
78/ 2/11	15 - 425	23.1 - 174.2	335.5 - 10.7			
78/ 2/11	2250 - 2400	122.2 - 164.5	167.7 - 177.7			
78/ 2/12	0 - 420	164.5 - 321.7	177.7 - 214.4			
78/ 2/12	2315 - 2400	287.8 - 315.0	13.9 - 20.3			
				105 - 155	203.8 - 234.0	186.9 - 193.9
				205 - 320	240.1 - 285.4	195.4 - 206.0
				2315 - 2400	287.8 - 315.0	13.9 - 20.3
78/ 2/13	0 - 420	315.0 - 112.2	20.3 - 57.1			
78/ 2/14	35 - 500	126.6 - 286.8	49.6 - 266.8			
78/ 2/14	2205 - 2240	186.4 - 207.6	51.1 - 56.0			
78/ 2/14	2250 - 2400	213.6 - 256.0	57.5 - 67.4			
				330 - 405	232.4 - 253.6	254.2 - 259.1
				450 - 500	280.8 - 286.8	265.4 - 266.8
				2300 - 2345	219.7 - 246.9	58.9 - 65.3
78/ 2/15	0 - 410	256.0 - 47.1	67.4 - 103.0			
78/ 2/15	2240 - 2400	358.1 - 46.4	260.1 - 271.4			
				40 - 50	280.1 - 286.2	73.1 - 74.5
78/ 2/16	0 - 405	46.4 - 194.5	271.4 - 305.7			
78/ 2/16	2315 - 2400	169.7 - 196.9	108.3 - 114.7			
78/ 2/17	0 - 400	196.9 - 342.0	114.7 - 148.9			
78/ 2/17	2200 - 2400	274.8 - 347.4	301.1 - 317.9			
				15 - 40	206.0 - 221.1	116.9 - 120.4
78/ 2/18	0 - 400	347.4 - 132.5	317.9 - 351.7			
78/ 2/18	2235 - 2305	86.5 - 104.6	150.0 - 154.2			
78/ 2/18	2335 - 2400	122.7 - 137.9	158.5 - 162.0			
78/ 2/19	0 - 355	137.9 - 279.9	162.0 - 195.3			
78/ 2/19	2240 - 2400	240.0 - 288.3	353.4 - 4.7			
78/ 2/20	0 - 350	288.3 - 67.4	4.7 - 37.2			
78/ 2/20	2235 - 2400	27.4 - 78.8	197.1 - 209.1			
78/ 2/21	0 - 345	78.8 - 214.8	209.1 - 240.7			
78/ 2/21	2305 - 2400	196.0 - 229.2	43.9 - 51.7			
78/ 2/22	0 - 340	229.2 - 2.2	51.7 - 83.0			
78/ 2/22	2235 - 2400	328.3 - 19.7	243.8 - 255.8			
78/ 2/23	0 - 340	19.7 - 152.7	255.8 - 286.6			
78/ 2/23	2235 - 2400	118.8 - 170.1	86.9 - 99.0			
				2235 - 2325	118.8 - 149.0	86.9 - 94.0
				2345 - 2400	161.1 - 170.1	96.8 - 99.0
78/ 2/24	0 - 335	170.1 - 300.1	99.0 - 129.6			
				0 - 15	170.1 - 179.2	99.0 - 101.1
78/ 2/25	6 - 330	320.6 - 87.5	302.3 - 331.8			
78/ 2/26	25 - 325	126.1 - 234.9	149.8 - 175.3			
78/ 2/27	0 - 50	261.5 - 291.7	348.9 - 356.0			

22.2 MHZ GODDARD SPACE FLIGHT CENTER

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE	TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
78/ 2/27	100 - 325	297.7 - 25.4	357.4 - 17.9			
78/ 2/28	0 - 320	51.9 - 172.8	193.3 - 221.4			
78/ 3/ 1	100 - 315	238.6 - 320.2	44.3 - 63.5			
78/ 3/ 2	20 - 310	4.8 - 107.6	242.8 - 266.6			
78/ 3/ 3	20 - 310	155.3 - 258.0	85.8 - 110.1			
				20 - 55	155.3 - 176.4	85.8 - 90.8
78/ 3/ 4	30 - 305	311.7 - 45.4	290.7 - 312.4			
78/ 3/ 5	20 - 300	96.1 - 192.8	133.1 - 155.8			
78/ 3/ 6	145 - 255	297.9 - 340.2	347.8 - 357.7			
78/ 3/ 7	25 - 255	39.9 - 130.6	180.8 - 202.0			
78/ 3/ 9	120 - 140	14.0 - 26.1	235.3 - 238.1			
78/ 3/ 9	150 - 250	32.1 - 68.4	239.5 - 247.9			
78/ 3/10	5 - 245	119.1 - 215.8	67.6 - 90.4			
				115 - 210	161.4 - 194.6	77.6 - 85.6
78/ 3/11	15 - 240	275.5 - 3.1	272.6 - 292.9			
78/ 3/11	2300 - 2400	20.6 - 36.8	105.5 - 114.1			
78/ 3/12	0 - 100	56.8 - 93.1	114.1 - 122.6			
78/ 3/12	125 - 240	108.2 - 153.5	126.2 - 136.8			
78/ 3/12	2330 - 2400	189.1 - 207.2	312.7 - 317.0			
78/ 3/13	0 - 45	207.2 - 234.4	317.0 - 323.3			
78/ 3/13	115 - 235	252.6 - 300.9	327.5 - 338.8			
78/ 3/14	5 - 230	0.6 - 88.3	161.9 - 182.4			
78/ 3/15	5 - 225	151.0 - 235.5	4.3 - 24.2			
78/ 3/16	5 - 225	301.4 - 26.9	208.6 - 228.3			
78/ 3/17	20 - 220	100.8 - 173.4	53.5 - 70.5			
78/ 3/17	2330 - 2400	221.0 - 239.1	250.2 - 254.4			
				45 - 110	115.9 - 131.1	57.0 - 60.6
78/ 3/18	0 - 155	239.1 - 308.6	254.4 - 270.5			
				5 - 40	242.1 - 263.3	255.1 - 260.0
78/ 3/19	0 - 215	29.5 - 111.1	97.8 - 117.0			
78/ 3/20	5 - 210	182.9 - 258.4	301.5 - 319.0			
				55 - 110	213.1 - 222.2	308.5 - 310.6
78/ 3/21	0 - 205	330.2 - 45.8	144.8 - 162.5			
78/ 3/22	135 - 245	178.0 - 220.3	0.8 - 10.7			
78/ 3/22	340 - 500	253.6 - 301.9	18.5 - 29.8			
78/ 3/23	250 - 455	13.7 - 89.3	215.5 - 233.1			
78/ 3/24	155 - 455	130.8 - 239.6	50.6 - 76.2			
78/ 3/25	245 - 450	311.4 - 26.9	261.2 - 278.7			
78/ 3/26	130 - 535	56.4 - 204.5	94.1 - 129.0			
				525 - 535	198.5 - 204.5	127.5 - 129.0
78/ 3/27	100 - 140	188.6 - 212.8	292.9 - 298.5			
78/ 3/27	245 - 445	252.1 - 324.6	307.6 - 324.5			
78/ 3/28	115 - 440	348.1 - 112.0	139.0 - 168.0			
78/ 3/29	105 - 440	132.4 - 262.3	340.1 - 10.5			
78/ 3/30	105 - 155	282.7 - 312.9	184.4 - 191.4			

22.2 MHZ GODDARD SPACE FLIGHT CENTER

DATE YY/MM/DD	OBSERVATIONS TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE	ACTIVITY TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE
78/ 3/30	215 - 435	325.0 - 49.6	194.2 - 213.9			
78/ 3/31	100 - 430	70.0 - 196.9	26.2 - 56.1			
78/ 4/ 1	125 - 425	235.5 - 344.3	233.6 - 258.8			
				135 - 215	241.5 - 265.7	235.0 - 240.6
78/ 4/ 2	210 - 425	53.0 - 134.6	83.3 - 102.5			
				405 - 415	122.5 - 128.6	99.6 - 101.0
78/ 4/ 3	135 - 200	179.2 - 197.3	280.6 - 284.9			
78/ 4/ 3	220 - 420	209.4 - 281.9	287.7 - 304.5			
78/ 4/ 4	125 - 415	326.5 - 69.2	123.9 - 148.0			
78/ 4/ 5	140 - 415	125.9 - 219.6	328.5 - 350.4			
78/ 4/ 6	135 - 200	273.2 - 288.3	172.1 - 175.6			
78/ 4/ 6	330 - 410	342.7 - 6.9	188.3 - 193.9			
78/ 4/ 7	125 - 405	57.5 - 154.2	13.2 - 35.9			
78/ 4/ 8	200 - 405	228.9 - 304.5	222.0 - 239.5			
78/ 4/ 9	150 - 400	13.2 - 91.8	63.7 - 82.2			
78/ 4/10	110 - 355	139.4 - 239.1	261.3 - 284.4			
78/ 4/11	120 - 210	295.7 - 325.9	106.5 - 113.6			
78/ 4/11	2320 - 2400	13.5 - 37.7	292.2 - 297.8			
				120 - 210	295.7 - 325.9	106.5 - 113.6
78/ 4/12	0 - 350	37.7 - 176.7	297.8 - 330.2			
78/ 4/13	40 - 310	212.2 - 302.8	147.6 - 168.8			
78/ 4/13	315 - 345	305.9 - 324.0	169.5 - 173.7			
78/ 4/14	2250 - 2400	86.3 - 128.6	178.7 - 188.6			
78/ 4/15	0 - 340	128.6 - 261.6	188.6 - 219.4			
				220 - 305	213.3 - 240.5	208.2 - 214.5
78/ 4/16	35 - 335	300.1 - 48.9	36.3 - 61.9			
				40 - 100	303.1 - 315.2	37.0 - 39.8
78/ 4/17	140 - 335	129.7 - 199.2	248.9 - 265.0			
78/ 4/18	145 - 330	283.0 - 346.5	93.2 - 108.1			
78/ 4/18	2345 - 2400	0.8 - 9.9	279.0 - 281.1			
78/ 4/19	0 - 325	9.9 - 133.8	281.1 - 310.0			
78/ 4/19	2350 - 2400	154.1 - 160.2	123.8 - 125.2			
78/ 4/20	0 - 155	160.2 - 229.7	125.2 - 141.5			
				0 - 15	160.2 - 169.3	125.2 - 127.3
78/ 4/22	200 - 315	173.3 - 218.7	188.7 - 199.2			
78/ 4/23	230 - 325	341.8 - 15.0	35.7 - 43.6			
				310 - 325	5.9 - 15.0	41.4 - 43.6
78/ 4/24	2105 - 2400	83.9 - 191.7	36.5 - 61.4			
78/ 4/25	0 - 310	191.7 - 306.5	61.4 - 88.4			
				150 - 215	258.2 - 273.3	77.0 - 80.6
78/ 4/26	155 - 305	51.5 - 93.8	280.5 - 290.3			
78/ 4/27	110 - 300	174.6 - 241.1	118.2 - 133.8			
				125 - 205	183.7 - 207.8	120.4 - 126.0
78/ 4/29	155 - 255	142.4 - 178.7	171.2 - 179.6			
78/ 4/30	140 - 335	283.6 - 353.1	11.7 - 28.0			

22.2 MHZ GODDARD SPACE FLIGHT CENTER

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE	TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
				140 - 220	283.6 - 307.8	11.7 - 17.4
				240 - 335	313.9 - 353.1	20.2 - 28.0
78/ 5/ 1	150 - 215	80.0 - 95.1	216.7 - 220.2			
78/ 5/ 1	230 - 250	104.1 - 116.2	222.3 - 225.1			
78/ 5/ 1	2225 - 2320	106.4 - 139.6	30.9 - 38.7			
78/ 5/ 2	30 - 305	181.9 - 275.6	48.7 - 70.7			
				250 - 305	266.5 - 275.6	68.6 - 70.7

22.2 MHZ NANCAY, FRANCE

DATE YY/MM/DD	OBSERVATIONS TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE
77/ 8/13	515 - 1105	158.7 - 10.3	59.5 - 108.5
77/ 8/14	515 - 1115	309.1 - 166.7	262.9 - 314.0
77/ 8/15	510 - 815	96.5 - 208.3	105.1 - 131.1
77/ 9/12	340 - 945	294.7 - 155.4	26.6 - 77.7
77/ 9/13	335 - 850	82.2 - 272.6	229.3 - 274.0
77/ 9/14	330 - 935	229.7 - 90.3	71.6 - 122.9
77/ 9/15	330 - 730	20.2 - 165.2	275.6 - 309.6
77/ 9/16	325 - 825	167.6 - 349.0	117.5 - 159.9
77/ 9/17	320 - 825	315.1 - 139.5	321.1 - 3.9
77/ 9/17	850 - 925	154.6 - 173.8	7.4 - 12.3
77/ 9/18	320 - 920	105.6 - 323.2	163.7 - 214.9
77/ 9/19	315 - 715	253.1 - 38.2	6.9 - 40.5
77/ 9/20	313 - 750	42.4 - 209.8	209.8 - 249.2
77/ 9/21	310 - 905	191.1 - 45.7	52.6 - 102.5
77/ 9/22	300 - 635	335.6 - 105.5	255.1 - 285.6
77/ 9/23	240 - 905	114.0 - 346.7	94.9 - 149.4
77/ 9/24	255 - 805	273.6 - 101.0	301.4 - 345.0
77/ 9/25	255 - 900	64.1 - 284.7	143.9 - 195.8
77/ 9/26	250 - 855	211.6 - 72.2	347.3 - 38.5
77/ 9/27	245 - 850	359.1 - 219.7	189.6 - 241.6
77/ 9/28	245 - 845	149.6 - 7.3	33.1 - 83.6
77/ 9/29	225 - 805	288.1 - 133.6	234.0 - 282.3
77/ 9/30	235 - 645	84.6 - 235.8	78.2 - 113.5
77/10/ 1	230 - 835	232.2 - 92.8	281.8 - 333.2
77/10/ 2	230 - 805	22.7 - 225.2	124.3 - 171.9
77/10/ 3	225 - 630	170.2 - 318.3	327.9 - 2.3
77/10/ 4	220 - 615	317.7 - 99.8	170.0 - 203.5
77/10/ 5	215 - 255	105.3 - 129.4	13.0 - 18.6
77/10/ 5	340 - 520	156.6 - 217.1	24.9 - 38.9
77/10/ 6	215 - 445	255.8 - 346.5	216.6 - 237.9
77/10/ 6	500 - 605	355.6 - 34.9	240.0 - 249.3
77/10/ 6	640 - 740	56.0 - 92.3	254.2 - 262.7
77/10/ 7	210 - 735	43.3 - 239.8	58.8 - 104.6

TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
930 - 1000	312.8 - 331.0	95.2 - 99.4
515 - 620	234.1 - 273.4	133.0 - 142.2
240 - 305	114.0 - 129.1	94.9 - 98.5
400 - 450	253.9 - 284.1	357.1 - 4.2
505 - 610	234.3 - 273.5	52.7 - 61.8
225 - 250	288.1 - 305.2	234.0 - 237.6
310 - 420	105.8 - 148.1	83.1 - 93.0
430 - 540	154.2 - 196.5	94.4 - 104.3
415 - 440	236.7 - 251.8	343.3 - 346.8
525 - 540	279.0 - 288.1	352.1 - 355.2
600 - 630	300.2 - 318.3	358.0 - 2.3
315 - 430	82.6 - 128.0	68.0 - 78.5

22.2 MHZ NANCAY, FRANCE

DATE YY/MM/DD	OBSERVATIONS TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE	ACTIVITY TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE
				440 - 600	134.0 - 182.4	79.9 - 91.2
77/10/ 8	205 - 720	190.9 - 21.3	262.3 - 306.8			
77/10/ 9	205 - 610	341.4 - 129.6	104.9 - 139.6			
77/10/10	200 - 545	129.0 - 265.0	308.5 - 340.2			
77/10/11	155 - 715	276.5 - 110.0	150.5 - 196.1			
77/10/12	150 - 730	64.1 - 269.6	353.8 - 41.4			
77/10/13	150 - 705	214.6 - 45.1	197.1 - 241.9			
				435 - 450	314.4 - 323.5	220.6 - 222.8
				505 - 515	332.5 - 338.6	221.9 - 226.3
77/10/14	145 - 615	2.2 - 165.4	39.6 - 77.6			
77/10/15	140 - 635	149.8 - 328.1	243.0 - 284.8			
77/10/16	135 - 740	297.3 - 158.0	84.9 - 136.6			
77/10/17	135 - 735	87.9 - 305.5	289.3 - 340.0			
77/10/18	130 - 735	235.5 - 96.1	131.3 - 183.2			
77/10/19	120 - 730	20.0 - 243.7	334.0 - 25.9			
77/10/20	120 - 725	170.6 - 31.3	177.1 - 229.1			
77/10/21	115 - 726	318.2 - 178.8	19.9 - 71.2			
77/10/22	115 - 640	108.8 - 305.3	223.8 - 269.9			
				400 - 515	208.5 - 253.9	247.2 - 257.8
77/10/23	110 - 715	256.3 - 117.0	65.9 - 117.4			
77/10/24	105 - 710	43.9 - 264.6	269.5 - 321.0			
77/10/25	100 - 705	191.5 - 52.2	111.4 - 163.3			
77/10/26	55 - 700	339.1 - 199.8	315.0 - 6.2			
77/10/27	55 - 700	129.7 - 350.4	158.0 - 210.0			
				320 - 520	217.4 - 289.9	178.7 - 195.8
77/10/28	50 - 655	277.3 - 138.0	1.0 - 52.2			
77/10/29	45 - 650	64.9 - 285.6	204.0 - 255.8			
				415 - 450	191.9 - 213.0	233.9 - 238.8
				515 - 610	228.1 - 261.4	242.4 - 250.2
77/10/30	40 - 645	212.5 - 73.2	46.3 - 97.8			
77/10/31	40 - 625	3.1 - 211.7	250.6 - 299.3			
77/11/ 1	35 - 635	150.7 - 8.4	92.5 - 143.6			
				135 - 200	187.0 - 282.1	101.0 - 104.5
77/11/ 2	30 - 635	298.3 - 159.0	296.2 - 347.5			
77/11/ 3	25 - 630	85.9 - 306.6	138.3 - 190.3			
				550 - 550	270.3 - 282.4	181.8 - 184.6
77/11/ 4	20 - 625	233.5 - 94.2	341.6 - 32.8			
77/11/ 5	15 - 620	21.1 - 241.8	184.4 - 236.3			
77/11/ 6	15 - 615	171.8 - 29.4	27.6 - 78.3			
				225 - 240	250.4 - 259.4	45.8 - 48.0
77/11/ 7	10 - 615	319.4 - 180.1	231.: - 282.7			
77/11/ 8	5 - 610	107.0 - 327.7	73.1 - 124.8			
				55 - 205	137.2 - 179.6	80.1 - 90.8
				320 - 345	224.9 - 240.0	100.6 - 104.2
77/11/ 9	0 - 605	254.6 - 115.3	276.8 - 328.2			

22.2 MHZ NANCAY, FRANCE

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE	TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
77/11/10	0 - 600	45.3 - 262.9	119.6 - 170.8			
77/11/10	2350 - 2400	189.9 - 195.9	322.3 - 323.7			
77/11/11	0 - 555	195.9 - 50.6	323.7 - 13.5			
77/11/11	2350 - 2400	340.5 - 346.6	165.6 - 167.0			
77/11/12	0 - 555	346.6 - 201.2	167.0 - 217.6			
77/11/12	2345 - 2400	128.2 - 137.2	8.3 - 10.4			
77/11/13	0 - 550	137.2 - 348.9	10.4 - 59.6			
77/11/13	2340 - 2400	275.8 - 287.9	211.7 - 214.5			
77/11/14	0 - 545	287.9 - 136.5	214.5 - 263.4			
77/11/14	2335 - 2400	63.4 - 78.5	53.8 - 57.3			
77/11/15	0 - 540	78.5 - 284.1	57.3 - 105.4			
77/11/15	2330 - 2400	211.1 - 229.2	257.5 - 261.8			
				40 - 120	102.7 - 126.9	62.9 - 68.6
				155 - 215	148.1 - 160.2	73.5 - 76.4
				235 - 300	172.3 - 187.4	79.2 - 82.7
				345 - 420	214.6 - 235.7	89.1 - 94.1
77/11/16	0 - 535	229.2 - 71.8	261.3 - 309.0			
77/11/16	2325 - 2400	358.7 - 19.9	99.5 - 104.5			
				100 - 130	265.5 - 283.6	270.3 - 274.5
77/11/17	0 - 530	19.9 - 219.4	104.5 - 151.4			
77/11/17	2325 - 2400	149.4 - 170.5	303.8 - 308.8			
77/11/18	0 - 525	170.5 - 7.0	308.8 - 354.4			
77/11/18	2320 - 2400	297.0 - 321.2	146.2 - 151.9			
				225 - 235	258.2 - 264.2	329.1 - 330.5
77/11/19	0 - 525	321.2 - 157.7	151.9 - 198.2			
77/11/19	2315 - 2400	84.7 - 111.9	349.2 - 355.6			
77/11/20	0 - 520	111.9 - 305.3	355.6 - 40.5			
77/11/20	2310 - 2400	232.3 - 262.5	192.4 - 199.5			
				410 - 435	263.0 - 278.1	30.6 - 34.2
77/11/21	0 - 120	262.5 - 310.9	199.5 - 210.9			
77/11/21	215 - 515	344.2 - 93.0	218.7 - 244.2			
77/11/21	2305 - 2400	19.9 - 53.2	34.7 - 42.4			
77/11/22	0 - 510	53.2 - 240.6	42.4 - 86.2			
77/11/22	2300 - 2400	167.6 - 203.9	238.4 - 246.9			
77/11/23	0 - 505	203.9 - 28.3	246.9 - 289.9			
77/11/23	2255 - 2400	315.2 - 354.5	80.3 - 89.5			
				100 - 130	240.1 - 258.3	255.3 - 259.6
77/11/24	0 - 500	354.5 - 175.9	89.5 - 132.2			
77/11/24	2255 - 2400	105.9 - 145.2	284.8 - 293.9			
77/11/25	0 - 455	145.2 - 323.6	293.9 - 335.4			
77/11/25	2250 - 2400	253.6 - 295.9	127.0 - 137.0			
77/11/26	0 - 450	295.9 - 111.2	137.0 - 178.3			
77/11/26	2245 - 2400	41.2 - 86.6	330.3 - 340.8			
77/11/27	0 - 450	86.6 - 261.9	340.8 - 21.5			
77/11/27	2240 - 2400	188.9 - 237.2	173.2 - 184.6			

22.2 MHZ NANCAY, FRANCE

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE	TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
77/11/28	0 - 445	237.2 - 49.6	184.6 - 225.1			
77/11/28	2235 - 2400	336.5 - 27.9	15.7 - 27.6			
77/11/29	0 - 440	27.9 - 197.2	27.6 - 67.1			
77/11/29	2230 - 2400	124.2 - 178.6	219.3 - 232.0			
77/11/30	0 - 435	178.6 - 344.9	232.0 - 270.9			
77/11/30	2230 - 2400	274.9 - 329.3	62.0 - 74.7			
				35 - 225	199.8 - 266.3	237.0 - 252.6
				2320 - 2400	305.1 - 329.3	69.1 - 74.7
77/12/ 1	0 - 430	329.3 - 132.5	74.7 - 113.1			
77/12/ 1	2220 - 2400	59.5 - 120.0	265.1 - 279.2			
77/12/ 2	0 - 425	120.0 - 286.2	279.2 - 316.5			
77/12/ 2	2215 - 2400	207.2 - 270.6	107.2 - 122.2			
				2305 - 2325	237.4 - 249.5	114.3 - 117.2
77/12/ 3	0 - 420	270.6 - 67.8	122.2 - 159.2			
77/12/ 3	2215 - 2400	337.8 - 61.3	311.4 - 326.1			
77/12/ 4	0 - 415	61.3 - 215.5	326.1 - 1.9			
77/12/ 4	2210 - 2400	145.5 - 212.0	154.1 - 169.8			
77/12/ 5	0 - 410	212.0 - 3.2	169.8 - 205.4			
77/12/ 5	2205 - 2400	293.2 - 2.7	356.8 - 13.0			
				40 - 120	236.2 - 260.4	175.5 - 181.2
77/12/ 6	0 - 410	2.7 - 153.8	13.0 - 48.2			
77/12/ 6	2200 - 2400	80.8 - 153.4	200.2 - 217.3			
77/12/ 7	0 - 405	153.4 - 301.5	217.3 - 252.0			
77/12/ 7	2155 - 2400	228.5 - 304.1	42.4 - 60.0			
				120 - 220	201.7 - 238.0	228.6 - 237.1
				235 - 305	247.1 - 265.2	239.3 - 243.5
77/12/ 8	0 - 400	304.1 - 89.2	60.0 - 94.0			
77/12/ 8	2150 - 2400	16.1 - 94.7	246.2 - 264.6			
77/12/ 9	0 - 355	94.7 - 236.8	264.6 - 297.6			
77/12/ 9	2120 - 2400	148.7 - 245.4	84.7 - 107.4			
				2120 - 2220	148.7 - 185.0	84.7 - 93.2
77/12/10	0 - 350	245.4 - 24.5	107.4 - 140.2			
77/12/10	2140 - 2400	311.4 - 36.1	291.9 - 311.5			
				0 - 350	245.4 - 24.5	107.4 - 140.2
77/12/11	0 - 345	36.1 - 172.1	311.5 - 343.1			
77/12/11	2135 - 2400	99.1 - 186.8	134.3 - 155.0			
77/12/12	0 - 340	186.8 - 319.8	155.0 - 186.4			
77/12/12	2135 - 2400	249.8 - 337.5	338.0 - 358.4			
				125 - 200	238.2 - 259.3	167.1 - 172.1
77/12/13	0 - 335	337.5 - 107.5	358.4 - 28.6			
77/12/13	2130 - 2400	37.4 - 128.1	181.3 - 202.6			
77/12/14	0 - 355	128.1 - 270.2	202.6 - 235.9			
77/12/14	2125 - 2400	185.1 - 278.8	23.6 - 45.4			
				220 - 355	212.8 - 270.2	222.5 - 235.9
				2230 - 2335	224.4 - 263.7	32.7 - 41.9

22.2 MHZ NANCAY, FRANCE

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE	TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
77/12/15	0 - 325	278.8 - 42.8	45.4 - 74.4			
77/12/15	2120 - 2400	332.8 - 69.5	227.3 - 249.9			
77/12/16	0 - 325	69.5 - 193.5	249.9 - 278.8			
77/12/16	2115 - 2400	120.4 - 220.2	69.3 - 92.7			
77/12/17	0 - 315	220.2 - 338.1	92.7 - 120.5			
77/12/17	2110 - 2400	268.1 - 10.9	273.1 - 297.0			
77/12/18	0 - 315	10.9 - 128.8	297.0 - 324.3			
77/12/18	2105 - 2400	55.7 - 161.5	115.4 - 140.3			
77/12/19	0 - 310	161.5 - 276.4	140.3 - 167.4			
77/12/19	2100 - 2400	203.4 - 312.2	318.6 - 343.8			
77/12/20	0 - 305	312.2 - 64.1	343.8 - 9.8			
77/12/20	2055 - 2400	351.0 - 102.9	161.6 - 187.9			
77/12/21	0 - 300	102.9 - 211.7	187.9 - 213.5			
77/12/21	2055 - 2400	141.7 - 253.6	4.8 - 30.8			
77/12/22	0 - 300	253.6 - 2.4	30.8 - 56.2			
77/12/22	2050 - 2400	289.3 - 44.2	208.4 - 235.3			
				40 - 110	277.7 - 295.9	36.5 - 40.7
				2145 - 2205	322.6 - 334.7	216.2 - 219.0
77/12/23	0 - 255	44.2 - 150.0	235.3 - 260.0			
77/12/25	2035 - 2400	12.3 - 136.2	96.4 - 125.6			
77/12/26	0 - 235	136.2 - 229.9	125.6 - 147.7			
77/12/27	2025 - 2400	307.6 - 77.6	142.6 - 173.2			
77/12/28	0 - 225	77.6 - 165.2	173.2 - 193.8			
77/12/28	2020 - 2400	95.2 - 228.2	345.3 - 16.2			
				2105 - 2130	122.4 - 137.5	351.6 - 355.1
				2200 - 2220	155.7 - 167.8	359.3 - 2.2
77/12/29	0 - 220	228.2 - 312.9	16.2 - 35.9			
				35 - 100	249.4 - 264.5	21.1 - 24.7
				130 - 220	282.6 - 312.9	28.9 - 35.9
78/ 1/ 1	2000 - 2400	325.7 - 110.8	76.7 - 110.9			
78/ 1/ 2	0 - 205	110.8 - 186.4	110.9 - 128.7			
78/ 1/ 2	2000 - 2400	116.4 - 261.5	281.0 - 314.7			
78/ 1/ 3	0 - 200	261.5 - 334.0	314.7 - 331.5			
78/ 1/ 3	1955 - 2400	264.0 - 52.1	123.5 - 158.5			
78/ 1/ 4	0 - 200	52.1 - 124.7	158.5 - 175.5			
78/ 1/ 4	1950 - 2400	51.6 - 202.8	326.5 - 1.6			
78/ 1/ 5	0 - 150	202.8 - 269.3	1.6 - 17.1			
78/ 1/ 5	2155 - 2400	277.8 - 353.4	188.2 - 205.9			
				50 - 150	233.0 - 269.3	8.6 - 17.1
				2155 - 2245	277.8 - 308.1	188.2 - 195.3
78/ 1/ 6	0 - 145	353.4 - 56.9	205.9 - 220.8			
78/ 1/ 6	1940 - 2400	346.8 - 144.0	12.0 - 48.7			
78/ 1/ 7	0 - 145	144.0 - 207.5	48.7 - 63.5			
78/ 1/ 9	1925 - 2400	69.7 - 235.9	261.4 - 300.0			
78/ 1/10	0 - 130	235.9 - 290.3	300.0 - 312.7			

22.2 MHZ NANCAY, FRANCE

DATE YY/MM/DD	OBSERVATIONS TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE	ACTIVITY TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE
78/ 1/10	1920 - 2400	217.3 - 26.6	103.7 - 143.6			
78/ 1/12	1915 - 2400	155.5 - 327.8	150.6 - 191.1			
				2130 - 2215	237.1 - 264.3	169.8 - 176.2
78/ 1/13	1910 - 2400	303.1 - 118.4	353.0 - 33.9			
78/ 1/14	0 - 115	118.4 - 163.7	33.9 - 44.5			
78/ 1/14	1905 - 2400	90.7 - 269.0	196.6 - 238.4			
				2215 - 2350	205.5 - 263.0	223.5 - 236.9
78/ 1/15	0 - 110	269.0 - 311.3	238.4 - 248.2			
78/ 1/15	1900 - 2400	238.2 - 59.6	38.6 - 81.2			
78/ 1/16	0 - 135	59.6 - 98.9	81.2 - 90.4			
78/ 1/16	1855 - 2400	25.8 - 210.2	242.4 - 285.3			
78/ 1/17	0 - 110	210.2 - 252.5	285.3 - 295.1			
78/ 1/17	1850 - 2400	173.4 - 0.8	84.5 - 128.7			
				50 - 110	240.5 - 252.5	292.3 - 295.1
				2000 - 2125	215.7 - 267.1	94.5 - 106.6
78/ 1/18	0 - 55	0.8 - 34.1	128.7 - 136.5			
78/ 1/18	1845 - 2400	321.0 - 151.4	287.9 - 332.1			
78/ 1/19	0 - 55	151.4 - 184.7	332.1 - 339.8			
78/ 1/19	1845 - 2350	111.6 - 296.0	131.3 - 174.8			
78/ 1/20	0 - 45	302.0 - 329.2	176.2 - 182.6			
78/ 1/20	1840 - 2400	259.1 - 92.6	334.0 - 19.0			
78/ 1/21	0 - 40	92.6 - 116.8	19.0 - 24.6			
78/ 1/21	1835 - 2400	46.7 - 243.2	177.4 - 223.4			
78/ 1/22	0 - 40	243.2 - 267.4	223.4 - 229.1			
78/ 1/22	1830 - 2400	194.3 - 33.8	19.5 - 66.1			
				1950 - 2020	242.6 - 260.8	30.7 - 35.0
78/ 1/23	0 - 35	33.8 - 54.9	66.1 - 71.1			
78/ 1/23	1825 - 2400	341.8 - 184.3	223.2 - 270.4			
78/ 1/24	0 - 30	184.3 - 202.5	270.4 - 274.6			
78/ 1/24	1820 - 2400	129.4 - 334.9	65.2 - 113.6			
				2105 - 2140	229.1 - 250.3	88.7 - 93.6
78/ 1/25	0 - 25	334.9 - 350.0	113.6 - 117.2			
78/ 1/25	1815 - 2235	276.9 - 74.1	268.7 - 305.2			
78/ 1/25	2305 - 2400	92.2 - 125.5	309.4 - 317.1			
78/ 1/26	0 - 20	125.5 - 137.6	317.1 - 319.9			
78/ 1/26	1810 - 2400	64.4 - 276.0	111.2 - 161.1			
78/ 1/27	0 - 20	276.0 - 288.1	161.1 - 163.9			
78/ 1/27	1810 - 2400	215.0 - 66.6	314.8 - 3.9			
78/ 1/28	1805 - 2400	2.5 - 217.2	158.0 - 208.4			
78/ 1/29	1800 - 2400	150.1 - 7.7	0.2 - 51.0			
				2030 - 2120	240.7 - 271.0	21.3 - 28.4
78/ 1/30	1755 - 2400	297.6 - 158.3	203.9 - 255.3			
78/ 1/31	1750 - 2400	85.1 - 308.8	45.8 - 98.4			
				2215 - 2250	245.3 - 265.5	83.4 - 88.4
78/ 2/ 1	1800 - 2350	241.7 - 93.3	251.5 - 300.6			

22.2 MHZ NANCAY, FRANCE

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE	TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
				1820 - 1850	253.8 - 271.9	254.3 - 258.5
78/ 2/ 2	1745 - 2345	23.2 - 240.8	92.4 - 143.7			
78/ 2/ 3	1800 - 2345	182.8 - 31.3	298.2 - 346.7			
78/ 2/ 4	1730 - 2335	315.2 - 175.8	137.7 - 189.6			
78/ 2/ 5	1805 - 2335	126.8 - 326.3	345.6 - 32.2			
78/ 2/ 6	1845 - 2330	301.5 - 113.8	195.6 - 235.9			
78/ 2/ 7	1720 - 1935	40.7 - 122.3	26.2 - 45.3			
78/ 2/ 7	2220 - 2325	222.0 - 261.3	68.7 - 78.0			
78/ 2/ 8	1735 - 2035	200.2 - 309.1	232.7 - 258.0			
				1830 - 1910	233.5 - 257.7	240.5 - 246.1
78/ 2/14	1655 - 2255	359.0 - 216.7	7.2 - 58.2			
78/ 2/15	1650 - 2005	146.5 - 264.4	210.9 - 238.4			
78/ 2/15	2025 - 2255	276.5 - 7.1	241.2 - 262.2			
78/ 2/16	1735 - 2250	324.2 - 154.6	59.9 - 104.8			
78/ 2/17	1640 - 2245	81.4 - 302.0	256.2 - 307.4			
				2040 - 2135	226.5 - 259.7	289.9 - 297.6
78/ 2/18	1640 - 2245	231.9 - 92.5	99.4 - 151.4			
78/ 2/19	1720 - 2240	46.5 - 240.0	308.4 - 353.4			
78/ 2/20	1705 - 2235	187.9 - 27.4	150.3 - 197.1			
78/ 2/21	1715 - 2230	344.4 - 174.8	354.4 - 38.9			
78/ 2/22	1715 - 2225	134.9 - 322.3	198.8 - 242.4			
78/ 2/23	1720 - 2220	288.3 - 109.7	42.1 - 84.7			
78/ 2/24	1805 - 2220	106.0 - 260.1	252.5 - 288.3			
78/ 2/25	1815 - 2215	262.5 - 47.6	97.1 - 131.3			
78/ 2/26	1715 - 2210	16.7 - 195.0	292.0 - 333.4			
78/ 2/27	1740 - 2205	182.2 - 342.4	139.4 - 177.0			
78/ 2/28	1725 - 2205	323.6 - 132.8	340.0 - 19.5			

22.2 MHZ ORRORAL, AUSTRALIA

DATE YY/MM/DD	OBSERVATIONS TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE	ACTIVITY TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE
77/10/14	1455 - 2240	119.8 - 40.9	151.2 - 217.4			
77/10/15	1250 - 2210	194.8 - 173.4	7[illegible].5 - 56.1			
77/10/16	1245 - 2230	342.4 - 336.0	180.0 - 263.2			
77/10/17	1240 - 2205	129.9 - 111.5	22.7 - 102.2			
77/10/18	1240 - 2130	280.5 - 240.9	226.6 - 301.6			
77/10/19	1235 - 2205	68.1 - 52.7	68.7 - 149.4			
				1420 - 1525	131.6 - 170.9	83.5 - 92.7
77/10/20	1230 - 2205	215.7 - 203.3	272.4 - 353.3			
77/10/21	1225 - 2205	3.2 - 353.9	114.2 - 196.7			
77/10/22	1220 - 2330	150.8 - 195.9	317.8 - 51.8			
77/10/23	1220 - 2305	301.4 - 331.4	160.8 - 252.6			
				2025 - 2115	234.6 - 264.9	229.8 - 236.9
77/10/24	1210 - 2120	86.0 - 58.5	3.1 - 80.3			
77/10/24	2140 - 2305	70.6 - 122.0	83.2 - 95.2			
77/10/25	1210 - 2230	236.6 - 251.4	206.8 - 294.6			
77/10/26	1350 - 2255	87.6 - 57.1	63.8 - 140.9			
				1415 - 1445	102.8 - 120.9	67.3 - 71.5
77/10/27	1200 - 2255	171.8 - 207.8	252.6 - 344.9			
				1400 - 1430	244.3 - 262.4	269.6 - 273.8
77/10/28	1200 - 2245	322.4 - 352.3	95.2 - 186.9			
				1950 - 2025	246.5 - 267.7	162.0 - 167.0
77/10/29	1155 - 2230	110.0 - 133.9	298.9 - 28.0			
77/10/30	1150 - 2230	257.6 - 284.5	141.0 - 232.1			
77/10/31	1145 - 1400	45.2 - 126.8	344.3 - 3.2			
77/10/31	1445 - 2230	154.0 - 75.1	9.5 - 74.9			
77/11/ 1	1140 - 2220	192.8 - 219.7	187.0 - 277.9			
77/11/ 2	1140 - 2150	343.4 - 352.2	30.2 - 116.3			
				1610 - 1640	146.6 - 164.8	68.2 - 72.5
				1920 - 1950	261.5 - 279.7	95.1 - 99.3
77/11/ 3	1135 - 2045	131.0 - 103.5	233.7 - 311.4			
77/11/ 3	2110 - 2210	118.7 - 154.9	314.9 - 323.3			
				1550 - 1600	285.2 - 291.2	269.8 - 271.2
77/11/ 4	1150 - 1725	290.7 - 133.2	78.5 - 126.0			
77/11/ 4	1735 - 2230	139.3 - 317.7	127.4 - 169.4			
77/11/ 5	1210 - 2220	93.4 - 102.2	285.8 - 11.4			
				1210 - 1400	93.4 - 159.9	285.8 - 301.3
77/11/ 6	1120 - 1400	213.8 - 310.6	121.5 - 144.2			
77/11/ 6	1410 - 2145	316.6 - 231.7	145.6 - 210.5			
77/11/ 7	1120 - 2210	4.5 - 37.5	325.6 - 56.8			
				1925 - 2000	297.7 - 318.9	33.6 - 38.6
77/11/ 8	1115 - 2205	152.1 - 185.1	168.2 - 260.6			
77/11/ 9	1110 - 2130	299.7 - 314.6	10.9 - 98.3			
77/11/10	1105 - 2200	87.4 - 123.4	214.2 - 306.8			
				1400 - 1430	193.2 - 211.3	239.1 - 243.3
				1440 - 1515	217.3 - 238.5	244.8 - 249.7

22.2 MHZ ORRORAL, AUSTRALIA

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE	TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
77/11/12	1055 - 2145	22.6 - 55.6	260.1 - 351.5			
				1620 - 1630	219.1 - 225.2	305.9 - 307.3
77/11/13	1405 - 2000	288.1 - 142.8	129.8 - 180.3			
77/11/14	1400 - 2125	75.8 - 344.8	333.0 - 35.5			
77/11/15	1045 - 2130	108.5 - 138.5	148.8 - 240.5			
				1335 - 1350	211.3 - 220.4	173.0 - 175.1
				1450 - 1520	256.7 - 274.8	183.7 - 188.0
77/11/16	1800 - 2125	162.2 - 286.1	53.6 - 82.5			
77/11/17	1600 - 2120	240.3 - 73.8	241.1 - 286.3			
				1615 - 1635	249.4 - 261.5	243.2 - 246.0
77/11/18	1140 - 2135	233.8 - 233.5	47.0 - 131.3			
77/11/19	1200 - 2130	36.5 - 21.2	254.3 - 334.5			
77/11/20	1130 - 2130	169.1 - 171.8	92.7 - 178.1			
77/11/21	1220 - 2100	350.0 - 304.4	304.1 - 17.1			
77/11/22	1000 - 2115	56.0 - 104.1	127.4 - 223.5			
77/11/23	1305 - 2105	318.5 - 248.7	357.3 - 64.8			
77/11/24	1115 - 2105	42.7 - 39.4	185.6 - 269.3			
77/11/25	1005 - 2100	151.0 - 187.1	18.8 - 111.4			
				1835 - 1920	99.4 - 126.6	90.8 - 97.2
77/11/26	1000 - 2055	298.7 - 334.7	222.4 - 314.8			
77/11/27	955 - 1305	86.3 - 201.2	64.5 - 91.3			
77/11/27	1330 - 2050	216.3 - 122.4	94.9 - 157.5			
77/11/28	950 - 2040	234.0 - 267.0	268.2 - 359.6			
77/11/29	945 - 1200	21.6 - 103.3	110.4 - 129.6			
77/11/29	1240 - 1500	127.4 - 212.1	135.3 - 155.2			
77/11/29	1515 - 1825	221.2 - 336.0	157.4 - 184.4			
77/11/29	1905 - 2040	0.2 - 57.7	190.1 - 203.6			
77/11/30	945 - 2035	172.3 - 205.3	314.5 - 45.8			
77/12/ 1	930 - 2035	313.9 - 356.0	155.8 - 250.3			
				1910 - 1930	304.6 - 316.7	238.3 - 241.1
77/12/ 2	1010 - 1045	128.8 - 150.0	4.9 - 9.8			
77/12/ 2	1105 - 2025	162.0 - 140.6	12.6 - 91.6			
				1910 - 1940	95.3 - 113.4	81.0 - 85.2
77/12/ 3	925 - 2015	252.3 - 285.3	202.6 - 294.5			
				1855 - 1925	236.9 - 255.0	283.3 - 287.5
77/12/ 4	1250 - 2010	166.9 - 72.9	74.5 - 137.0			
77/12/ 5	915 - 2005	187.6 - 220.6	248.6 - 340.0			
77/12/ 6	915 - 1150	338.3 - 72.0	91.3 - 113.4			
77/12/ 6	1200 - 2000	78.0 - 8.3	114.8 - 183.2			
77/12/ 7	910 - 1040	125.9 - 180.3	295.0 - 307.6			
77/12/ 7	1110 - 1955	198.5 - 155.9	311.8 - 25.5			
77/12/ 8	905 - 1000	273.6 - 306.8	137.4 - 145.3			
77/12/ 8	1020 - 1955	318.9 - 306.6	148.1 - 229.9			
				1755 - 1815	234.0 - 246.1	212.9 - 215.7
77/12/ 9	925 - 1115	76.4 - 142.9	343.9 - 359.4			

22.2 MHZ ORRORAL, AUSTRALIA

DATE YY/MM/DD	OBSERVATIONS TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE	ACTIVITY TIME(UT) HHMM - HHMM	CML III (1965.0)	IO PHASE
77/12/ 9	1125 - 1950	148.9 - 94.3	0.8 - 71.9			
77/12/10	1115 - 1130	293.5 - 302.6	203.5 - 205.7			
77/12/10	1150 - 1945	314.7 - 241.9	208.5 - 275.7			
77/12/11	1245 - 1945	138.6 - 32.6	59.1 - 118.7			
77/12/12	1150 - 1940	256.1 - 180.3	255.8 - 321.9			
77/12/13	1035 - 1940	1.4 - 330.9	88.0 - 165.6			
77/12/14	905 - 935	97.7 - 115.8	279.7 - 283.9			
77/12/14	1035 - 1945	152.1 - 124.6	292.3 - 9.5			
				1230 - 1335	221.6 - 260.9	308.5 - 317.6
77/12/15	1125 - 1140	333.0 - 342.1	142.7 - 144.8			
77/12/15	1150 - 1945	348.1 - 275.3	146.2 - 213.8			
77/12/16	1000 - 1100	72.3 - 108.6	334.3 - 342.7			
77/12/16	1155 - 1230	141.8 - 163.0	350.4 - 355.3			
77/12/16	1245 - 2030	172.0 - 93.2	357.4 - 63.0			
77/12/17	825 - 855	165.5 - 183.7	164.6 - 168.9			
77/12/17	905 - 1030	189.7 - 241.1	170.3 - 182.5			
77/12/17	1040 - 1115	247.1 - 268.3	183.9 - 188.9			
77/12/17	1135 - 2025	280.4 - 240.9	191.7 - 266.7			
77/12/18	820 - 1030	313.2 - 31.8	7.1 - 25.4			
77/12/18	1120 - 2025	62.0 - 31.5	32.5 - 109.7			
77/12/19	815 - 835	100.8 - 112.9	210.8 - 213.6			
77/12/19	855 - 1020	125.0 - 176.4	216.4 - 228.5			
77/12/19	1100 - 2020	200.6 - 179.2	234.1 - 313.0			
				1210 - 1230	242.9 - 255.0	244.0 - 246.9
77/12/20	850 - 1540	272.7 - 160.6	58.5 - 116.7			
77/12/20	1625 - 2015	187.8 - 326.8	123.1 - 155.9			
				850 - 900	272.7 - 278.7	58.5 - 59.9
77/12/21	1050 - 2010	135.9 - 114.5	279.9 - 358.5			
77/12/22	1140 - 2000	316.8 - 259.1	130.1 - 201.3			
77/12/23	730 - 805	316.3 - 337.5	298.7 - 303.6			
77/12/23	915 - 1100	19.8 - 83.3	313.4 - 328.2			
77/12/23	1125 - 1510	98.4 - 234.4	331.7 - 3.2			
77/12/23	1535 - 1820	249.6 - 349.3	6.8 - 30.0			
77/12/24	730 - 825	107.0 - 140.2	142.1 - 149.9			
77/12/24	850 - 1005	155.3 - 200.7	153.5 - 164.2			
77/12/24	1020 - 1450	209.8 - 13.0	166.3 - 204.7			
77/12/24	1510 - 1820	25.1 - 140.0	207.6 - 234.5			
77/12/25	1000 - 1035	348.3 - 9.5	6.6 - 11.6			
77/12/25	1045 - 1125	15.5 - 39.7	13.0 - 18.6			
77/12/25	1215 - 1810	70.0 - 284.6	25.6 - 75.8			
77/12/26	930 - 1015	120.9 - 148.1	205.7 - 213.1			
77/12/26	1025 - 1105	154.1 - 178.3	214.5 - 220.2			
77/12/26	1115 - 1810	184.4 - 75.3	221.6 - 280.2			
				1235 - 1320	232.7 - 259.9	233.0 - 239.3
77/12/27	1120 - 1140	338.0 - 350.1	65.1 - 67.9			

22.2 MHZ ORRORAL, AUSTRALIA

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE	TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
77/12/27	1235 - 1445	23.4 - 102.0	75.7 - 94.2			
77/12/27	1505 - 2025	114.1 - 307.6	97.0 - 142.6			
77/12/28	1100 - 1230	116.6 - 171.0	266.7 - 279.3			
77/12/28	1245 - 1755	180.1 - 7.5	281.4 - 325.0			
77/12/29	1145 - 1830	294.5 - 179.3	116.1 - 173.8			
				1225 - 1245	318.7 - 330.7	121.8 - 124.6
77/12/30	1200 - 1510	94.2 - 209.1	322.0 - 348.7			
77/12/30	1520 - 1825	215.1 - 327.0	350.1 - 16.1			
				1545 - 1600	230.2 - 239.3	353.6 - 355.7
77/12/31	925 - 1020	151.1 - 184.4	143.8 - 151.6			
77/12/31	1120 - 1815	220.7 - 111.6	160.1 - 219.1			
				1250 - 1300	275.1 - 281.1	173.0 - 174.4
78/ 1/ 1	1230 - 1805	53.6 - 256.2	13.1 - 60.4			
78/ 1/ 2	945 - 1040	104.5 - 137.8	194.2 - 202.0			
78/ 1/ 2	1145 - 1515	177.1 - 304.1	211.2 - 240.9			
78/ 1/ 2	1530 - 1810	313.1 - 49.9	243.0 - 265.6			
78/ 1/ 3	1225 - 1740	351.9 - 182.4	59.6 - 104.3			
				1525 - 1630	100.7 - 140.0	85.1 - 94.4
78/ 1/ 4	1220 - 1255	139.5 - 160.7	263.3 - 268.2			
78/ 1/ 4	1500 - 1810	236.3 - 351.2	285.8 - 312.5			
				1515 - 1545	245.3 - 263.5	287.9 - 292.1
78/ 1/ 5	700 - 915	96.7 - 178.3	60.8 - 80.0			
78/ 1/ 5	925 - 1020	184.4 - 217.6	81.4 - 89.2			
78/ 1/ 5	1030 - 1055	223.7 - 238.8	90.7 - 94.2			
78/ 1/ 5	1110 - 1815	247.9 - 144.8	96.3 - 156.9			
				1140 - 1155	266.0 - 275.1	100.6 - 102.7
78/ 1/ 6	1520 - 1805	189.6 - 289.4	335.4 - 358.6			
78/ 1/ 7	1140 - 1210	207.3 - 225.4	148.2 - 152.5			
78/ 1/ 7	1220 - 1255	231.4 - 252.6	153.9 - 158.9			
78/ 1/ 7	1315 - 1800	264.7 - 77.0	161.7 - 202.3			
78/ 1/ 8	1100 - 1210	333.7 - 16.0	345.8 - 355.6			
78/ 1/ 8	1320 - 1435	58.4 - 103.7	5.5 - 16.0			
78/ 1/ 8	1505 - 1800	121.8 - 227.6	20.3 - 45.0			
78/ 1/ 9	1420 - 1455	245.3 - 266.4	218.4 - 223.3			
78/ 1/ 9	1545 - 1750	296.7 - 12.2	230.4 - 248.0			
				1545 - 1630	296.7 - 323.9	230.4 - 236.8
78/ 1/10	820 - 1015	178.2 - 247.8	10.2 - 26.4			
78/ 1/10	1155 - 1745	308.2 - 159.8	40.6 - 90.2			
				1610 - 1620	102.4 - 108.4	76.7 - 78.1
78/ 1/11	730 - 800	298.6 - 316.8	207.6 - 211.9			
78/ 1/11	910 - 935	339.1 - 14.2	221.8 - 225.3			
78/ 1/11	1040 - 1115	53.5 - 74.7	234.5 - 239.4			
78/ 1/11	1210 - 1635	107.9 - 268.1	247.2 - 284.4			
				1615 - 1630	256.0 - 265.1	281.6 - 283.7
78/ 1/12	810 - 1735	113.4 - 95.0	56.0 - 136.3			

22.2 MHZ ORRORAL, AUSTRALIA

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE	TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
78/ 1/13	1205 - 1215	333.6 - 52.2	276.5 - 294.8			
78/ 1/13	1245 - 1725	70.3 - 239.6	299.0 - 338.3			
78/ 1/14	1005 - 1045	124.2 - 148.4	119.8 - 125.5			
78/ 1/14	1140 - 1305	181.6 - 233.0	133.3 - 145.4			
78/ 1/14	1400 - 1720	266.3 - 27.2	153.3 - 181.7			
78/ 1/15	1045 - 1135	299.0 - 329.2	329.0 - 336.0			
78/ 1/15	1200 - 1655	344.3 - 162.7	339.5 - 21.0			
78/ 1/16	915 - 1030	35.2 - 80.5	160.2 - 170.9			
78/ 1/16	1050 - 1705	92.6 - 319.3	173.7 - 226.9			
				1450 - 1520	237.7 - 255.8	207.8 - 212.0
78/ 1/17	1210 - 1340	291.6 - 346.0	27.8 - 40.6			
78/ 1/17	1405 - 1700	1.1 - 106.9	44.1 - 68.9			
78/ 1/18	925 - 1700	342.4 - 257.5	209.0 - 273.1			
78/ 1/19	735 - 820	66.5 - 93.7	36.1 - 42.5			
78/ 1/19	1035 - 1200	175.3 - 226.7	61.6 - 73.7			
78/ 1/19	1235 - 1305	247.9 - 266.0	78.6 - 82.9			
78/ 1/19	1315 - 1640	272.1 - 36.0	84.3 - 113.5			
78/ 1/20	710 - 745	202.0 - 223.1	237.1 - 242.0			
78/ 1/20	1235 - 1600	38.5 - 162.4	282.8 - 311.5			
78/ 1/21	910 - 955	65.1 - 92.3	96.9 - 103.3			
78/ 1/21	1035 - 1555	116.5 - 310.0	109.0 - 154.6			
78/ 1/22	1105 - 1155	285.2 - 315.4	316.9 - 323.9			
78/ 1/22	1230 - 1545	336.6 - 94.5	328.8 - 356.2			
78/ 1/23	615 - 710	260.5 - 293.7	119.5 - 127.3			
78/ 1/23	725 - 825	302.8 - 339.1	129.5 - 138.0			
78/ 1/23	910 - 1140	6.3 - 97.0	144.4 - 165.8			
78/ 1/23	1300 - 1415	145.3 - 190.7	177.2 - 187.8			
78/ 1/23	1430 - 1620	199.7 - 266.2	190.0 - 205.5			
78/ 1/24	620 - 730	54.1 - 96.4	323.7 - 333.5			
78/ 1/24	930 - 1030	168.9 - 205.2	350.4 - 358.8			
78/ 1/24	1100 - 1145	223.3 - 250.6	3.0 - 9.4			
78/ 1/24	1300 - 1440	295.9 - 356.4	19.9 - 34.0			
78/ 1/24	1455 - 1615	5.4 - 53.8	36.2 - 47.5			
78/ 1/25	645 - 800	219.8 - 265.1	171.3 - 181.9			
78/ 1/25	810 - 925	271.1 - 316.5	183.3 - 194.0			
78/ 1/25	940 - 1025	325.6 - 352.8	196.1 - 202.5			
78/ 1/25	1035 - 1105	358.8 - 16.9	203.9 - 208.1			
78/ 1/25	1115 - 1235	23.0 - 71.4	209.6 - 220.9			
78/ 1/25	1250 - 1610	80.4 - 201.3	223.0 - 251.2			
78/ 1/26	615 - 640	352.2 - 7.3	9.8 - 13.3			
78/ 1/26	710 - 805	25.4 - 58.7	17.6 - 25.3			
78/ 1/26	1010 - 1050	134.3 - 158.4	43.0 - 48.7			
78/ 1/27	730 - 825	188.1 - 221.3	224.9 - 232.6			
78/ 1/27	905 - 945	245.5 - 269.7	238.2 - 243.9			
78/ 1/27	950 - 1000	272.7 - 278.8	244.6 - 246.0			

22.2 MHZ ORRORAL, AUSTRALIA

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE	TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
78/ 1/27	1030 - 1105	296.9 - 318.1	250.2 - 255.1			
78/ 1/27	1400 - 1555	63.9 - 133.4	279.7 - 295.8			
78/ 1/28	615 - 720	293.3 - 332.6	56.9 - 66.2			
78/ 1/28	745 - 820	347.7 - 8.9	69.7 - 74.7			
78/ 1/28	1000 - 1025	69.3 - 84.4	88.9 - 92.5			
78/ 1/28	1050 - 1145	99.6 - 132.8	96.0 - 103.9			
78/ 1/29	700 - 735	111.1 - 132.2	267.5 - 272.4			
78/ 1/29	745 - 820	138.3 - 159.4	273.8 - 278.8			
78/ 1/29	1000 - 1035	219.9 - 241.0	292.8 - 297.7			
78/ 1/29	1135 - 1215	277.3 - 301.5	306.1 - 311.7			
78/ 1/29	1240 - 1350	316.6 - 358.9	315.2 - 325.0			
78/ 1/29	1400 - 1540	5.0 - 65.4	326.4 - 340.5			
78/ 1/30	615 - 630	234.4 - 243.5	104.3 - 106.5			
78/ 1/30	655 - 750	258.6 - 291.8	110.0 - 117.9			
78/ 1/30	1320 - 1545	131.3 - 219.0	164.8 - 185.4			
78/ 1/31	745 - 800	79.4 - 88.4	320.5 - 322.7			
78/ 1/31	900 - 945	124.7 - 151.9	331.1 - 337.4			
78/ 1/31	1030 - 1110	179.1 - 203.3	343.7 - 349.3			
78/ 1/31	1320 - 1530	281.9 - 0.5	7.6 - 26.0			
78/ 2/ 1	610 - 735	172.5 - 223.9	151.1 - 163.2			
78/ 2/ 1	755 - 820	236.0 - 251.1	166.0 - 169.6			
78/ 2/ 1	945 - 1115	302.5 - 356.9	181.6 - 194.4			
78/ 2/ 1	1205 - 1320	27.1 - 72.4	201.5 - 212.1			
78/ 2/ 1	1400 - 1530	96.6 - 151.0	217.7 - 230.4			
78/ 2/ 2	620 - 650	329.1 - 347.2	355.4 - 359.6			
78/ 2/ 2	750 - 825	23.5 - 44.6	8.1 - 13.0			
78/ 2/ 3	640 - 745	131.7 - 171.0	202.6 - 211.8			
78/ 2/ 3	1000 - 1020	252.6 - 264.7	230.8 - 233.6			
78/ 2/ 3	1040 - 1155	276.8 - 322.1	236.5 - 247.0			
78/ 2/ 3	1200 - 1535	325.1 - 95.1	247.7 - 277.9			
78/ 2/ 4	700 - 800	294.3 - 330.6	48.1 - 56.6			
78/ 2/ 4	1030 - 1055	61.3 - 76.4	77.9 - 81.4			
78/ 2/ 4	1130 - 1245	97.5 - 142.9	86.4 - 97.1			
78/ 2/ 4	1315 - 1530	161.0 - 242.6	101.4 - 120.6			
				1150 - 1240	109.6 - 139.8	89.3 - 96.4
78/ 2/ 5	710 - 820	90.9 - 133.2	253.7 - 263.6			
78/ 2/ 5	1020 - 1125	205.7 - 245.0	280.4 - 289.5			
78/ 2/ 5	1325 - 1410	317.6 - 344.8	306.3 - 312.7			
78/ 2/ 5	1500 - 1615	15.0 - 60.3	319.7 - 330.2			
78/ 2/ 6	610 - 715	205.1 - 244.4	88.3 - 97.5			
78/ 2/ 6	735 - 825	256.5 - 286.7	100.4 - 107.5			
78/ 2/ 6	1210 - 1515	62.8 - 174.6	139.5 - 165.8			
78/ 2/ 7	430 - 505	295.2 - 316.3	278.0 - 282.9			
78/ 2/ 7	700 - 1140	25.9 - 195.1	299.0 - 338.3			
78/ 2/ 7	1330 - 1510	261.6 - 322.1	353.8 - 7.9			

22.2 MHZ ORRORAL, AUSTRALIA

DATE YY/MM/DD	TIME(UT) HHMM - HHMM	OBSERVATIONS CML III (1965.0)	IO PHASE	TIME(UT) HHMM - HHMM	ACTIVITY CML III (1965.0)	IO PHASE
78/ 2/ 8	1340 - 1505	58.2 - 109.6	199.6 - 211.6			
78/ 2/ 9	1405 - 1500	223.8 - 237.1	45.7 - 53.5			
78/ 2/11	615 - 715	240.7 - 277.0	26.3 - 34.8			
78/ 2/11	745 - 825	295.1 - 319.3	39.0 - 44.7			
78/ 2/11	1135 - 1205	74.1 - 92.3	71.7 - 75.9			
78/ 2/11	1225 - 1615	104.4 - 243.4	78.8 - 111.5			
				1315 - 1425	134.6 - 176.9	85.9 - 95.9
78/ 2/12	700 - 735	58.4 - 79.5	237.0 - 241.9			
78/ 2/12	805 - 825	97.7 - 109.8	246.1 - 248.9			
78/ 2/12	950 - 1100	161.2 - 203.5	260.9 - 270.7			
78/ 2/12	1110 - 1210	209.5 - 245.8	272.1 - 280.5			
78/ 2/12	1340 - 1700	300.2 - 61.1	293.1 - 321.2			
				1130 - 1155	221.6 - 236.7	274.9 - 278.4
78/ 2/13	415 - 545	109.1 - 163.5	56.4 - 69.2			
78/ 2/13	610 - 715	178.7 - 217.9	72.7 - 82.0			
78/ 2/13	910 - 1025	287.5 - 332.8	98.4 - 109.0			
78/ 2/13	1115 - 1610	3.0 - 181.4	116.2 - 158.2			
				440 - 450	124.2 - 130.3	59.9 - 61.4
78/ 2/14	930 - 1110	90.0 - 150.5	304.7 - 318.7			
78/ 2/14	1155 - 1350	177.7 - 247.2	325.0 - 341.2			
78/ 2/15	310 - 335	10.8 - 25.9	94.5 - 98.0			
78/ 2/15	1500 - 1605	80.0 - 119.3	195.4 - 204.6			
				310 - 355	10.8 - 38.0	94.5 - 100.9
78/ 2/16	615 - 655	273.1 - 297.3	323.9 - 329.6			
78/ 2/16	725 - 805	315.4 - 339.6	333.8 - 339.4			
78/ 2/16	1420 - 1700	206.3 - 303.0	32.3 - 55.0			
78/ 2/17	615 - 650	63.6 - 84.8	168.1 - 173.1			
78/ 2/17	700 - 1555	90.8 - 54.2	174.5 - 249.9			
				1105 - 1200	238.9 - 272.2	209.1 - 216.9
78/ 2/18	345 - 425	123.4 - 147.6	349.6 - 355.2			
78/ 2/18	1220 - 1550	74.7 - 201.7	62.4 - 92.3			
78/ 2/19	710 - 825	37.8 - 83.1	222.8 - 233.4			
78/ 2/19	940 - 1545	128.5 - 349.1	243.9 - 295.1			
78/ 2/20	610 - 655	152.0 - 179.2	57.1 - 63.5			
78/ 2/20	705 - 755	185.2 - 215.5	64.9 - 72.0			
78/ 2/20	1035 - 1355	312.2 - 73.1	94.8 - 123.3			
78/ 2/20	1445 - 1545	103.3 - 139.6	130.4 - 138.9			
78/ 2/21	335 - 445	208.7 - 251.1	239.3 - 249.1			
78/ 2/21	450 - 545	254.1 - 287.3	249.8 - 257.6			
78/ 2/21	600 - 1540	296.4 - 287.0	259.7 - 341.0			
				430 - 440	242.0 - 248.0	247.0 - 248.4
78/ 2/22	1020 - 1140	244.0 - 292.4	139.9 - 151.3			
78/ 2/22	1225 - 1245	319.6 - 331.7	157.7 - 160.5			
78/ 2/22	1315 - 1435	349.8 - 38.2	164.8 - 176.1			
78/ 2/23	1000 - 1055	22.4 - 55.6	339.9 - 347.7			