ABSORPTION MEASUREMENTS WITH RIOMETER

Data Summary Nº 9 for the period
January 1966 through June 1966

by

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RIOMETER MEASUREMENTS

DATA SUMMARY Nº 9

I - INTRODUCTION

This summary is a catalogue of reduced riometer data, for the period of observations from January through June 1966.

Figure 1 shows a "quiet-day" curve for São José dos Campos station which was obtained from the available data since the riometer was set in operation at this site, on March 15, 1963.

For each month, the values of the observations are tabulated for the first minute of each hour to the nearest 0.1 db, and the total number of readings for the month as well as the median and quartiles values are indicated in the same table . See for instance Tables V through XVI. Note that Figs. 2 and 3 also show the monthly medians mentioned above.

Table I shows a listing of important flares which occurred under sunlit periods for the station,whereas the Tables II and III contain all burst and SCNAs respectively under sunlight period as published by H.A.O. - Boulder (Colorado).

The absorption events measured at São José dos Campos are listed in the Table IV carrying time interval, maximum value of absorption, maximum variation about cosmic noise level, and eventual flare to which there is correlation.

The figures 4,5,6,7,8 show five portions of riometer records registered at the São José dos Campos station during time intervals containing 5 important solar flares and associated events.

II - DESCRIPTION OF THE EQUIPMENT

RIOMETER : The riometer (Relative Ionospheric Opacity Meter) is a device for measuring ionospheric absorption using the cosmic noise method.

A high gain and stable receiver is switched automatically between an antenna and a noise diode at a given switching frequency (340 Hz).

The antenna, which in our station is an east-west four elements Yagi, points vertically and receives the cosmic noise. If there is a difference between the antenna power and the noise diode power, a wave at the switching frequency appears at the detector of the receiver. The detector output is a DC voltage which has an amplitude that is proportional to the difference between the antenna and the diode signal. The voltage is used to adjust the current of a servo diode in order to reduce the above mentioned difference to zero. The diode noise is proportional to the antenna noise power. The diode current is re-

corded in a common pen recorder.

The riometer is calibrated daily by connecting a test noise diode in place of the antenna and passing different values of current for readings of the riometer.

The frequency used of 30 MHz is low enough to be sensitive to the non-deviative absorption effects of the lower ionosphere and yet it is sufficiently high so that a signal is detectable even under ionospheric disturbances.

III - MEASUREMENTS TECHNIQUE

In the noise method already mentioned, the absorption is measured by comparing the signal actually received with the signal that would be received in the same sidereal time under conditions of zero absorption.

In order to measure the absorption it is necessary to establish the local "quiet-day" curve. This curve is obtained from the riometer recording in the hours before the sunrise, when absorption is low. The values of current observed are transferred to the corresponding sidereal time. The highest reliable readings are considered points of the "quiet-day", which is assumed, as pointed before, to represent values of zero absorption condition.

Using the "quiet-day" curve, one can obtain the absorption in db at any given time by the relation:

$$A\ (\text{db}) = 10 \log_{10} (Ir/Iq)$$

Ir = noise power actually received at a given time

Iq = noise power from the "quiet-day" curve for the corresponding sidereal time.

IV - TYPE OF SCALING AND DATA REDUCTION

In reducing the riometer data, scaling TYPE I (URSI-AGI Committee 1958) has been used.

The absorption during the first minute of each hour of every day throughout a given period of absorption is recorded and then averaged. The results give a picture of the daily and seasonal variations of absorption.

The data reduction was performed in the following manner:

The "quiet-day" curve, assumed to represent zero absorption is plotted and hourly values of Iq are obtained. The actual values of current for each hour are translated to the correct sidereal time and the ratio Iq/Ir is calculated. For the given ratio, the absorption in db is obtained from regular tables.

The following qualifying symbols have been used for values obtained indirectly from the record :

C = failure of equipment
S = interference
U = value uncertain
I = value interpolated

V - ABSORPTION EFFECTS ASSOCIATED WITH SOLAR FLARES

The Sun's ionizing radiation during solar flares is normally enhanced and reaches the lower level of the ionosphere increasing the absorption through the D-region producing the attenuation of the cosmic noise reaching the antenna. Sometimes prior to the observation of attenuation and depending on the relative position of the Sun and antenna beam an enhancement of noise current is observed as a result of the Sun's HF radio emissions, during solar bursts of intensity greater than 1.

Several flares occurred during the local sunlight hours, and three of them could be clearly related to the absorption effects observed in the riometer records showing a noticeable intensity in all the 3 cases.

These three solar flares and other two of a certain interest will be described in the following paragraphs.

A large number of events of noise enhancements of the frequency used in the Riometer are correlated to radio emissions from the sun on 30 MHz, during solar burst phenomena.

VI - FLARE OF 17 JANUARY 1966

It was the first of two importance 3 flares occurred in the period from January through June 1966. Despite its intensity, the correlated absorption phenomenon was very weak, practically negligible.

From the riometer recordings it seems that a strong noise storm at the 30 MHz frequency was superimposed on the cosmic noise level, and the SCNA did not appear in its expected intensity, specially near 1112 UT when the ionospheric ionization must have reached the maximum phase. Nevertheless no burst was observed at H.A.O. of Boulder.

VII - FLARE OF 20 MARCH 1966 (Fig. 4)

H.A.O. of Boulder gives the following data about this important flare and associated events:
importance 3
begin 0947, end 1202
SCNA 0955-1010, importance 2.

At the riometer of São José dos Campos this flare originated, through the ionization, the most typical and suggestive cosmic noise absorption picture observed since this riometer was set in operation. Neither a burst was associated nor

any interference appears till the completion of the absorption decay.

The phenomenon began at 0956, reached its maximum phase at 1000 and terminated at 1010. Although the duration of the most evident portion of the occurrence was of 15 minutes approximately, as it may be observed in Fig. 4, the absorption, with a weaker intensity, continues and covers a total time interval of about equal to that of the flare,i.e., 2 hours and 15 minutes.

VIII - FLARES OF 29 MARCH 1966 (Fig.5)

In March 29, two flares of importance 2 were registered at H.A.O. of Boulder (Colorado), correspondingly to the sunlit period at São José dos Campos.

The first flare began at 1137 and finished at 1247 UT, while the second, beginning at 1746 ended at 1858 UT. A cosmic noise absorption event was observed at SJC riometer between 1058 and 1117 UT,i.e., before the begin of the flare. The only observable consequence, that eventually may be attributed to the flare, is the sudden downward drift of the cosmic noise level at 1348 UT.

The group of type III bursts which occurred during and after the flare is not clearly distinguishable.

The second flare (importance 2 also) of 29 March 1966 occurred between 1746 and 1858 UT. There is not evidence of cosmic noise absorption in the riometer recording, although a SCNA of importance 2 was registered by H.A.O. of Boulder within that time interval, namely from 1752 to 1806 UT.

Also in this case the recordings of associated bursts which occurred at the frequency of 30 MHz are very confused by interferences. Besides,the calibration made near 1850 UT seems to have coincided with the type IV burst which occurred between 1812:15 and 1905 UT at the frequency range of 10-41 MHz.

IX - FLARE OF 30 MARCH 1966 (FIG.6)

This flare of importance 2 began (as per optical observations made at the H.A.O. - Boulder) at 1309 UT,it reached its maximum phase at 1312 and ended at 1412 UT.

Besides a continued burst which began at 1249:30 UT (freq. range of 19-41 MHz), a type II burst occurred (at freq. range of 22-41 MHz) lasting from 1255 to 1258:45 UT.Another type II burst (at frequency range of 20-41 MHz) began at 1315 and finished at 1320 UT. Both type II bursts mentioned above were observed on the riometer records of SJC station: the former with some uncertainty about the time interval, the latter with close exactness.

At 1320 UT, immediately after the type II burst, a type IV strong burst began with a quick growth and partial decay

within a time interval of 45 about minutes, followed by a weaker decay of emission lasting almost one hour.

Together with this radio storm (mentioned among H.A.O. Radio Spectra of Boulder) an important cosmic noise absorption was observed on SJC riometer records. This phenomenon lasted 37 minutes and it began one minute later than the SCNA of importance 2+ observed at Boulder and finished two minutes earlier than the end of that.

X - FLARE OF 1 APRIL 1966 (FIG.7)

This flare of importance 2 began at 1737, had the maximum phase at 1750 and terminated at 1900 UT. No burst was associated to it.

A weak cosmic noise absorption was registered at the SJC riometer recordings, lasting from 1745 to 1815,i.e., very close to the time interval of the flare, and with a maximum phase at 1755,i.e., five minutes after the peak of the observed optical flare.

Although disturbed by strong man made interferences the lower envelope of cosmic noise level does not leave doubts about a clear correlation between the flare and the absorption at 30 MHz.

XI - FLARE OF 12 APRIL 1966 (FIG.8)

We have mentioned this flare of importance 1 which occurred between 1715 and 1749 UT only because, despite its small importance, it appears as responsible for the cosmic absorption observed with the riometer of SJC between 1718 and 1730 , i.e., closely within the time interval of the considered flare.

On the other hand it is not new that flares of importance 1 or 1+ are related timewise with absorption that sometimes is weakly or not at all associated to a flare of importance 2 or 3; for example the maximum value of absorption measured after the importance 3 flare of 17 January 1966 was of 0.13 db only.

Instead it is noticeable that in this case the maximum phase of absorption, that was registered at the same time of the maximum of the flare (1721 UT),presented a value of 3.34 db, and a maximum variation, from the standing cosmic noise level, of 1.03 db.

H.A.O. of Boulder registered a SCNA of importance 2 between 1718 and 1736 UT.

TABLE I

LISTING OF IMPORTANT FLARES WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC

Date 1966		Flare Importance	Time Interval (UT)			Observed by
			Start	Max Phase	End	
January	17	3	1046	1112	-	H.A.O. - Boulder
February	10	2	0946	-	-	" "
March	20	3	0947	-	1202	" "
	22	2	1115	-	1130	" "
	22	2	1407	1410	1436	" "
	26	2	1843	1852	1916	" "
	29	2	1137	-	1247	" "
	29	2	1746	1814	1858	" "
	30	2	1309	1312	1412	" "
	31	2	1807	1911	2045	Phase recorded at VLF
April	1	2	1737	1750	1900	Phase recorded at VLF
	11	2	1001	-	1034	H.A.O. - Boulder
	15	2	0955	-	1106	" "
May	28	2	1541	1628	1800	" "
June	25	2	1526	-	1630	" "

TABLE II

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL).

DATE 1966		B U R S T			
		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)
January	11*	III	1738	1738:30	22 - 41
		III	1930:15	1930:30	27 - 41
	12*	III	1456:15	1456:45	25 - 41
	13*	III	1814:30	1816	22 - 41
		III	1928	1928:45	23 - 41
	15	III	2131	2132	23 - 41
	16	Cont.	1840	1852:30	23 - 41
		IV	1852:30	2240	17 - 41
	17*	III	1537	1537:30	21 - 41
	*	III	1551:45	1552:15	22 - 41
		Cont.	1615	1700	23 - 41
		III	1838:30	1838:45	16 - 41
		III	1839	1839:15	16 - 41
		III	1844	1845	16 - 41
		III	2132:15	2132:30	23 - 35
	*	Cont.	2145	2155	22 - 41
	18	III	1544:15	1545	24 - 41
		Cont.	1630	1645	22 - 41
		Cont.	1727	1737	21 - 41
		III	1805:30	1806	27 - 36
		III	2109	2109:30	25 - 38
	19	Cont.	1459	1645	22 - 41
		III	1858	1858:30	29 - 41
		III	1904:15	1904:45	20 - 41
		III	2123:30	2123:45	24 - 32
	24	III	1552:45	1553:30	22 - 33
		III	1619	1619:30	26 - 34
		III	1624:30	1625	25 - 37
		III	1640:15	1641	21 - 41
		III	1647:15	1647:45	24 - 41
		III	1651	1651:30	25 - 41
		III	1700:30	1700:45	24 - 38
		Cont.	1718	1730	22 - 41
		III	1908:30	1909	20 - 41

TABLE II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL).

DATE 1966	B U R S T		
	TYPE	TIME INTERVAL (UT)	FREQ. RANGE (MHz)
January 24	III	1934 1934:30	23 - 41
	III	2025 2025:30	23 - 41
	III	2111 2111:15	26 - 39
	III	2113:30 2114:15	21 - 41
	III	2114:45 2115:15	21 - 41
	III	2116:30 2117	25 - 39
	III	2119:30 2119:45	24 - 41
	III	2142 2142:30	23 - 41
	III	2144:45 2145	27 - 41
	III	2145:45 2148	29 - 41
25*	III	1505:30 1505:45	21 - 35
*	III	1601:30 1602	16 - 41
*	III	1603 1603:30	18 - 41
*	III	1606 1606:30	16 - 41
	III	1617:15 1617:30	23 - 38
	III	1620:30 1620:45	28 - 39
	III	1623 1625	24 - 37
	III	1749:15 1750:15	16 - 41
	III	1755:45 1756:15	16 - 41
	III	1810:45 1811	22 - 41
	III	1815:45 1816:45	16 - 41
	Cont.	1815 1824	21 - 41
	III	1825:45 1826:15	26 - 35
	III	1827:15 1828:15	12 - 41
	III	1905:30 1906:15	15 - 41
	Cont.	1909 1921	21 - 41
	III	1911:30 1912:15	12 - 41
	III	2044 2044:30	24 - 37
	Cont.	2110 2122	23 - 41
	II	2114:45 2117	12 - 41
26*	III	1433 1433:15	29 - 41
	III	1720:30 1720:45	22 - 41

TABLE II (Cont.)

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DATE	BURST		
1966	TYPE	TIME INTERVAL (UT)	FREQ. RANGE (MHz)
January 26	III	1759 1759:15	23 - 35
	III	1959:30 1959:45	17 - 30
	III	2141:30 2142	14 - 41
27	III	2128:45 2129:15	22 - 37
28	III	1833 1833:15	23 - 41
	III	1845:15 1845:30	23 - 41
31*	III	1537:15 1537:45	21 - 41
February 2	II	1518 1525	16 - 41
	IV	1525 1555	18 - 41
	Cont.	1555 1635	24 - 41
5	III	1530:45 1533:15	22 - 41
	III	1554:45 1555:15	23 - 41
7	II	1645 1650:15	22 - 39
*	III	1650:15 1653:15	22 - 39
*	Cont.	1653 1703	23 - 36
9*	III	1408:45 1409:15	27 - 39
	III	1442:15 1442:45	23 - 41
	III	1550:45 1551:15	24 - 39
	III	1551:45 1552:45	25 - 41
15	III	1545:45 1546	29 - 38
*	III	1546 1546:30	24 - 38
19*	III	1553:45 1554:45	27 - 41
24	III	1953:30 1954:15	16 - 41
26*	III	1434:15 1435:30	22 - 41
28	III	1603:45 1604	20 - 35
	III	1612:30 1612:45	24 - 41
	III	1631 1631:30	24 - 41
	III	1645 1645:15	22 - 35
March 2	III	1617:15 1617:30	20 - 41
13	III	1339:45 1340	29 - 41
*	III	1431:45 1432	24 - 36
*	III	1526 1526:15	23 - 32
*	III	1536:15 1536:45	24 - 41

TABLE II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL).

DATE		B U R S T		
1966		TYPE	TIME INTERVAL (UT)	FREQ. RANGE (MHz)
March	13	III	1554:15 1554:30	23 - 30
		III	1555:15 1555:30	25 - 30
		III	1556:15 1556:30	26 - 34
		III	1620:15 1620:30	25 - 41
	*	III	1644 1644:15	27 - 41
		III	1707 1707:30	24 - 41
		III	1720:15 1721:30	25 - 41
		III	1725:45 1726:15	24 - 36
		III	1729:30 1729:45	30 - 41
		III	1732:30 1732:45	28 - 35
		III	1739:15 1739:45	24 - 41
		III	1758:30 1759	27 - 31
		III	1850:45 1851:15	26 - 41
		III	1928:30 1929:45	30 - 41
		III	1931:15 1931:30	25 - 36
	14	Cont.	1318:45 2005	16 - 41
		III	1832 1832:30	16 - 41
	15	Cont.	1313:30 2120	19 - 41
		III	1629 1630:30	13 - 41
	16	Cont.	1311:30 2440	20 - 41
		III	1514:45 1520	20 - 41
		III	1615 1619:30	12 - 41
	*	IV	1621:30 1800	20 - 41
		III	1625:30 1630	10 - 41
	*	III	1821:45 1824:30	16 - 41
	*	IV	1920:45 1928:15	8 - 41
		IV	1934 2059	21 - 41
	17	Cont.	1310 2440	16 - 41
		IV	1646:45 2428	12 - 41
		III	1700 1701:30	10 - 41
		III	1934:30 1938:30	10 - 41
	18	IV	1301 2450	20 - 41
		III	1553 1557:15	11 - 41

TABLE II (Cont.)

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DATE 1966		B U R S T			
		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)
March	19	IV	1304:45	2458	16 - 41
	20	IV	1302	2451:30	16 - 41
		III	1744:30	1745:15	10 - 41
	*	III	1857:45	1859:45	11 - 41
		III	1948	1949:15	11 - 41
		III	1959:45	2000:45	11 - 41
	21	IV	1801	2350	16 - 41
		III	1856:15	1857:30	11 - 41
	22	Cont.	1253	2435	21 - 41
		IV	1807:15	1824:30	16 - 41
		III	1818:15	1822:30	12 - 41
	23	Cont.	1303:45	2446:45	16 - 41
		IV	1303:45	2358:30	16 - 41
	24	Cont.	1302:15	2442:45	16 - 41
		III	1915	1918	10 - 41
	25	Cont.	1250	2440	20 - 41
		IV	1410:15	1802	16 - 41
	*	III	1645:30	1648	11 - 41
		III	1653:30	1655	11 - 41
		III	1929	1932:15	11 - 41
		III	2039	2042:15	11 - 41
		III	2051:45	2055	10 - 41
	26	Cont.	1244:30	2430	15 - 41
		III	1830	1834:15	11 - 41
		III	1910	1911:15	12 - 41
	27*	Cont.	1249	1425	20 - 41
	*	IV	1250	1340	20 - 41
		III	1501:30	1501:45	25 - 41
		III	1524:45	1529:30	12 - 41
		Cont.	1524:45	2159	22 - 41
		III	1532:15	1533:15	13 - 41
	28*	III	1504:30	1508:15	16 - 41
		III	1541:45	1542:15	24 - 38
		III	1834:15	1835	12 - 41
		III	1858:30	1859	26 - 31

TABLE II (Cont.)

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DATE 1966		B U R S T			
		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)
March	28	III	2028:15	2029	22 - 41
		III	2101:45	2102:15	25 - 41
		III	2104:30	2105	26 - 30
	29	III	1245:15	1245:45	24 - 31
	*	III	1321:30	1322:30	21 - 41
	*	III	1341	1341:30	26 - 38
	*	III	1347	1347:45	21 - 41
	*	III	1400	1402	20 - 41
	*	III	1403:30	1404	25 - 41
	*	III	1427:30	1428	26 - 41
	*	III	1450:15	1450:45	22 - 34
	*	III	1453:15	1453:45	23 - 41
	*	III	1518:30	1520	16 - 41
	*	III	1522:45	1523:30	21 - 41
	*	III	1525	1527	11 - 41
	*	III	1529	1532:45	16 - 41
		III	1533:45	1534:45	17 - 41
		III	1535	1536:30	19 - 41
		III	1537:15	1537:30	24 - 37
		III	1606:45	1607	28 - 41
		III	1622:15	1623	16 - 39
	*	III	1633:45	1634:30	16 - 41
	*	III	1637:45	1638:15	24 - 41
	*	III	1659:30	1701:45	11 - 41
	*	III	1702	1703	20 - 41
		III	1704:30	1704:35	22 - 41
	*	III	1707	1708	12 - 41
	*	III	1717:30	1718	21 - 41
	*	Cont.	1718:45	1732:45	12 - 41
		III	1740	1740:45	24 - 41
	*	III	1752:45	1753:30	24 - 41
		Cont.	1801:30	1812:15	23 - 41
		IV	1812:15	1905	10 - 41

TABLE II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL).

DATE 1966		BURST TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)
March	29	Cont.	1905	1950	22 - 41
		III	1957	1957:30	24 - 41
		III	2012	2012:30	22 - 34
		III	2013:15	2013:30	27 - 37
		III	2026:15	2026:45	26 - 35
		III	2052	2052:30	20 - 41
		III	2054	2055	25 - 41
	*	III	2100:30	2101:30	13 - 41
	30*	Cont.	1249:30	2131	19 - 41
		II	1255	1258:45	22 - 41
		II	1315	1320	20 - 41
	31	Cont.	1248	2452	19 - 41
		IV	1635	1659:30	19 - 41
April	1	Cont.	1240	2445	19 - 41
	2	Cont.	1240	2438	19 - 41
	3	Cont.	1243	2443	19 - 41
	4	Cont.	1235	2449	16 - 41
	5	Cont.	1235	2450	19 - 41
		III	1526:15	1530	12 - 41
	6	Cont.	1231	2450	19 - 41
	8	Cont.	1230	2450	18 - 41
	*	III	1452:30	1455:30	13 - 41
	9	Cont.	1300	2445	20 - 41
		III	2023	2024	15 - 41
	10*	III	1244:45	1245:45	18 - 41
	*	III	1246	1246:15	22 - 41
		III	1250:15	1250:30	26 - 37
	*	III	1351:15	1352	17 - 41
	*	III	1355	1355:30	23 - 41
	12	III	1531:30	1535	11 - 41
		II	1537	1547	22 - 41
		II	1545	1552	30 - 41
		IV	1552	1720	24 - 41

TABLE II (Cont.)

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DATE 1966		B U R S T			
		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)
April	14	III	1231	1231:15	15 - 41
		III	1233:15	1233:45	15 - 41
	*	III	1258:30	1259:15	14 - 41
		III	1305:15	1305:30	27 - 41
		III	1323:30	1323:45	23 - 31
		Cont.	1325	2445	20 - 41
	17*	III	1222	1223:15	23 - 41
	18	III	1644:15	1644:45	24 - 41
	20	III	1709:45	1910	28 - 38
		III	1754:15	1755	24 - 38
		Cont.	1930	2100	24 - 41
	21	III	1305	1306	22 - 41
		III	1659:45	1700	23 - 33
	*	III	1703:30	1704	21 - 41
		III	1711	1711:15	28 - 36
		III	1713:15	1713:30	26 - 36
		III	1727:30	1728	24 - 40
		III	1729:45	1730	28 - 41
		III	1752:30	1752:45	27 - 36
		Cont.	1813	2220	21 - 41
	22	III	1516:30	1516:45	21 - 33
		Cont.	1655	2004	20 - 41
	23	III	1216:30	1217	17 - 41
		Cont.	1305	2517	20 - 41
		III	1329:15	1329:45	18 - 41
		III	1953	1954	12 - 41
	24	Cont.	1210	2524	20 - 41
	*	III	1647:30	1650	11 - 41
	*	III	1650:15	1650:45	11 - 41
	*	III	1651	1652	11 - 41
		III	1739	1740:45	11 - 41
		III	1742	1743	11 - 41
	26	III	1230:30	1231	20 - 41

TABLE II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL).

DATE 1966		BURST TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)
April	26*	III	1242:30	1243:15	26 - 41
	*	III	1243:15	1244:15	20 - 41
		III	1358:15	1358:30	30 - 41
		III	1524:30	1525:15	28 - 36
		III	1526:15	1528:30	21 - 37
		III	1528:45	1529	23 - 39
		III	1531:45	1532:30	24 - 37
		III	1638:45	1639:15	29 - 36
		III	1646:30	1647	24 - 41
		III	1708	1708:15	28 - 36
		III	1742:30	1742:45	28 - 39
		III	1834:15	1834:45	18 - 41
		III	1838:30	1839:15	16 - 41
	27*	III	1351:45	1352:45	19 - 41
		III	1441	1441:15	26 - 35
		III	1448	1448:15	18 - 37
		III	1507:30	1508:15	17 - 35
	*	III	1512	1512:45	16 - 35
		III	1647:45	1648:15	14 - 41
		III	1704:45	1705	27 - 34
		III	1721:45	1722:15	21 - 39
		III	1738:30	1738:45	27 - 38
		III	1851:15	1852:15	21 - 41
		III	1923:15	1924	25 - 39
		III	1959:45	2000:15	26 - 36
	28	III	1320:30	1320:45	25 - 37
		III	1332:30	1332:45	25 - 37
		III	1348	1348:15	24 - 41
		III	1704:30	1704:45	27 - 38
	30*	III	1431	1431:45	22 - 41
	*	III	1532:45	1533:15	22 - 41
May	2	Cont.	1216	1320	19 - 41
		III	1217:30	1221:45	12 - 41

TABLE II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL).

DATE 1966		BURST TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)
May	2*	II	1223:30	1237:30	12 - 41
	6	III	1918:15	1922	12 - 41
	8	Cont.	1058	1259	24 - 41
		III	1829:30	1831:15	8 - 41
	9	Cont.	1058	1235	24 - 41
	*	III	1445	1446:15	11 - 41
		III	1707:15	1707:45	25 - 41
		III	2031:30	2033:15	8 - 41
	13*	III	1314	1314:30	26 - 41
	*	III	1314:45	1316	23 - 41
	*	III	1316	1317:30	23 - 41
		III	1547:30	1548:30	11 - 36
	15	III	1321:30	1322	24 - 41
		III	1707	1707:30	24 - 41
		III	1752	1753	8 - 41
	*	III	1753	1754:15	8 - 41
		III	1754:15	1754:45	24 - 41
		III	1858:45	1859	24 - 41
		III	1901:30	1903:15	8 - 41
		III	1904:45	1906:15	8 - 41
	16*	III	1203:30	1204:30	19 - 41
		III	1231:30	1232:15	19 - 41
		III	1239:45	1240:45	21 - 41
		III	1459:30	1459:45	29 - 41
	*	III	1501:45	1502	30 - 38
	*	III	1503:15	1503:45	25 - 41
		III	1756:15	1757	21 - 41
		III	1806:45	1807:15	21 - 39
	17	III	1229:30	1230	26 - 36
	*	III	1413:15	1414	16 - 41
	*	III	1642:15	1642:45	17 - 41
		III	1643:30	1644:30	8 - 41
		III	1644:30	1645	16 - 31

TABLE II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL).

DATE		B U R S T		
1966		TYPE	TIME INTERVAL (UT)	FREQ. RANGE (MHz)
May	17	III	1733 1733:15	22 - 41
		III	1800:15 1801	20 - 38
		III	1857:30 1858:30	8 - 41
		III	1905:30 1907	8 - 41
		III	1907:45 1908:30	8 - 38
		III	1930:45 1932	8 - 41
	18*	III	1540:15 1540:45	21 - 38
	*	III	1604:30 1605:15	16 - 41
		III	1708 1709	8 - 41
		III	1716 1716:30	23 - 41
		III	1730:45 1731	26 - 41
	20	III	1249:30 1250	22 - 41
	*	III	1551:30 1552:15	24 - 41
	21	III	1257 1257:15	24 - 41
		III	1258:30 1258:45	24 - 41
		III	1315:45 1316	25 - 38
	24	III	1310:45 1311:15	23 - 41
		III	1312:45 1313	28 - 36
		III	1316:30 1316:45	25 - 38
	*	III	1352:15 1353:45	25 - 41
	*	III	1356:15 1357:15	16 - 41
	*	III	1358 1359:30	12 - 41
	*	IV	1414:15 1420:30	11 - 41
		III	1423 1423:15	23 - 38
		Cont.	1443 1512	22 - 41
		III	1741:30 1744:15	8 - 41
		III	1747 1749:15	8 - 41
		III	1750:45 1751:45	8 - 41
		III	1755:45 1756	8 - 41
		III	1804:45 1805	25 - 41
		III	1816:30 1817:15	19 - 41
		III	1825:30 1825:45	25 - 35
		III	1906:30 1908:30	28 - 41

TABLE II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL).

LATE 1966		B U R S T			
		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)
May	24	III	1942:15	1943:15	25 - 41
		III	1948	1948:45	27 - 41
		III	1949:30	1949:45	29 - 41
		III	2022:15	2022:45	16 - 41
	25*	III	1313	1316:45	12 - 41
	*	III	1316:30	1317:30	20 - 41
	*	III	1437	1437:30	21 - 41
		III	1526:15	1526:45	25 - 41
	*	IV	1531:15	1604	8 - 41
	*	III	1653:45	1655	21 - 41
		III	1838	1839:30	8 - 41
		III	1852:45	1855	8 - 41
	26*	III	1349:45	1350:30	24 - 41
	*	III	1418:30	1419:30	11 - 36
	*	III	1436:15	1437	23 - 39
		III	1828	1828:15	23 - 41
	*	III	1852:15	1854:45	8 - 41
		III	1901:30	1903:45	8 - 41
	27	III	1256	1256:30	24 - 38
	*	III	1303:45	1304:15	24 - 41
	*	III	1312	1315	10 - 41
		III	1318:15	1318:30	24 - 32
		III	1412	1412:30	24 - 31
		III	1443:45	1444	22 - 41
		III	1449:30	1450	22 - 41
		III	1450:45	1451:15	23 - 41
		III	1554:45	1555	30 - 40
		Cont.	1616:30	1623:30	22 - 41
		Cont.	1643:30	1658:30	22 - 41
		III	1709:45	1710:15	23 - 33
	28	III	1501	1501:45	26 - 41
	*	III	1505:15	1505:45	22 - 41

TABLE II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL).

DATE 1966		B U R S T			
		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)
May	28*	III	1626	1629	8 - 41
		IV	1626	1855	21 - 41
		III	1633:15	1634	9 - 41
	29	III	1718:30	1718:45	23 - 32
		III	1802:30	1803	23 - 38
		III	1812	1812:15	26 - 34
June	1	III	1753	1753:15	24 - 41
		III	1856:45	1857	23 - 39
		III	1911:15	1911:30	24 - 40
		III	1913:15	1913:30	21 - 41
		III	2008:15	2008:30	25 - 36
		III	2017:30	2018	25 - 34
		III	2023:15	2023:45	24 - 36
	2	III	1244	1244:30	28 - 41
	*	III	1423	1425:15	10 - 41
		III	1901	1904:30	8 - 41
		II	1910	1914:15	26 - 39
		III	1913	1913:30	25 - 40
	4	III	1320:45	1321:15	12 - 41
		III	1331:30	1333:15	16 - 41
	5	III	1235:45	1237	21 - 41
		III	1308:45	1309:30	21 - 41
	9	III	1929	1929:30	18 - 41
	11*	III	1159:15	1159:30	22 - 41
	12	III	1710:15	1710:45	22 - 41
	*	III	1713	1713:30	22 - 40
		III	1745:45	1746:15	21 - 41
	*	III	1748:15	1749	25 - 41
	13	III	1215:15	1215:45	16 - 41
		III	1226	1226:30	16 - 35
	*	III	1226:30	1227:45	16 - 41

TABLE II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL).

DATE 1966		B U R S T			
		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)
June	13*	III	1609:30	1610:30	9 - 41
	*	III	1610:30	1612	8 - 41
		III	1612:45	1613:45	8 - 39
		III	1701:15	1702	12 - 41
		III	1741:45	1743	8 - 41
		III	1810	1810:30	22 - 41
		III	2005	2005:30	21 - 41
	15	III	1753:30	1755:15	22 - 38
		III	1924:30	1925:15	21 - 41
	18	III	1215:45	1216	22 - 37
		II	1603:45	1611	27 - 41
	19	III	2006:30	2007	22 - 41
	20*	III	1248:30	1249:30	15 - 41
		III	1253	1253:30	24 - 41
		III	1348:15	1348:45	20 - 41
		III	1548	1548:15	27 - 39
		III	1608	1608:15	24 - 41
		III	1829:30	1831:15	20 - 41
	21	III	1147	1149:45	20 - 41
		III	1701	1701:15	18 - 41
		III	1749:45	1750	21 - 38
		III	1755:15	1755:45	26 - 41
		III	1758:45	1759:15	29 - 41
		Cont.	1801:30	2045	22 - 41
	22	Cont.	1145	2430	22 - 41
	23	Cont.	1201	1340	20 - 41
		Cont.	1340	1905	22 - 41
	24	Cont.	1159	2025	22 - 41
	*	III	1519	1520	16 - 41
	25*	III	1531:15	1532:30	12 - 41
	*	III	1535:45	1542:30	7.6 - 41
	*	II	1539	1607	10 - 41

TABLE II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL).

DATE 1966		B U R S T			
		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)
June	25	IV	1607	1940	22 - 41
	26	III	1352	1352:15	16 - 40
		III	1602:45	1607	22 - 41
		III	1701:30	1707	26 - 41
	27	III	1430:30	1431:15	20 - 41
		III	1447	1447:30	21 - 34
		III	1450:15	1450:45	26 - 41
		III	1456:45	1457:15	22 - 32
		III	1500:30	1502:15	21 - 41
	28	III	1545:30	1545:45	30 - 38
		III	2019	2019:45	22 - 30
	29	III	1211:30	1211:45	18 - 31
	30*	III	1317:45	1323	18 - 41
	*	III	1324:45	1325	22 - 40
		III	1939:15	1939:45	24 - 34

TABLE III

SCNA$_S$ WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO).

DATE 1966	IMPORTANCE	TIME INTERVAL (UT) START	TIME INTERVAL (UT) END	RELATED SCNA AT SJC RIOMETER START	RELATED SCNA AT SJC RIOMETER END
Jan 4	-	2000	-		
Mar 2	1	1314	1353		
15	1	1635	1650		
16	1	1632	-		
20	2	0955	1010	0956	1010
20	1	1802	-		
28	2	1911	2000		
29	2	1752	1806		
30	2 +	1242	1322	1243	1320
31	2	1901	-		
31	1	1925	2030		
Apr 1	2	1747	1822	1745	1815
7	1	1645	1655		
10	1	1548	1601		
11	1 +	0959	1048		
11	2	1231	1313		
12	1	1004	1031		
12	2	1718	1736	1718	1730
May 28	1	1615	1658		
Jun 19	1	0932	0957		
25	1	1532	-		

TABLE IV

SCNA$_S$ OBSERVED WITH THE RIOMETER AT SÃO JOSÉ DOS CAMPOS

DATE 1966	ABSORPTION					RELATED FLARE			
	PERIOD (UT)			MAX VALUE (db)	MAX VARIATION (db)	IMPORTANCE	PERIOD (UT)		
	START	MAX PHASE	END				START	MAX PHASE	END
Jan 4	1034	1035	1040	0.76	0.23				
4	1040	1042	1043	0.76	0.19				
12	1436	1439	1440	1.17	0.24				
12	1450	1453	1453	1.17	0.27				
Feb 21	1137	1140	1143	1.10	0.13				
22	1508	1520	1522	2.07	0.52				
Mar 20	0956	1000	1010	1.73	0.87	3	0947	-	1202
29	1058	1117	1117	1.17	0.49				
30	1243	1305	1320	1.94	0.80				
Apr 1	1745	1755	1815	2.28	1.18	2	1737	1750	1900
4	1025	1100	1100	0.97	0.40				
12	1718	1721	1730	3.34	1.03	1	1715	1721	1749
24	1051	1105	1107	0.93	0.29				
May 8	1141	1230	1235	0.93	0.84				
8	1458	1500	1503	1.87	0.50				
25	1814	1816	1818	1.58	0.28				
Jun 8	1520	1522	1525	1.76	0.43				
11	1829	1855	1915	1.00	0.55				
12	1408	1409	1415	1.49	0.45				
14	1533	1548	1600	1.79	0.69				
16	1800	1802	1805	1.30	0.37				

XII - " QUIET-DAY " CURVE

The "quiet-day" curve for this station has been obtained from all the available data from the operation of the riometer during a period of relatively low absorption.

However with this procedure it seems that some errors have been introduced in the "quiet-day" curve, which became apparent while reduction of riometer data was performed in terms of daily absorption. They occurred as a consequence of including values obtained from hours when the absorption was low but could not be disregarded or considered equal to ZERO.

The whole "quiet-day" curve is being revised continuously using data corresponding to local time between 0300 AM and 0600 AM, when the absorption is low.

Due to equipment failure which occurred during the regular operation of the riometer, care should be taken while using the "quiet-day" curve to reduce riometer data (See Appendix I).

During the months of October and November, 1964 the riometer records presented a distortion on the daily curve with the I max/I min reduced of 15% to 25%. This was attributed to an equipment failure rather than to an external cause,solar or ionospheric. For the above reason the data of October was considered unreliable and was not reduced to absorption values.

The "quiet-day" curve "b" of Fig. 9 corrected as shown in Fig. 1 was used in the data reduction in the period from January through June 1966.

The time scale in the "quiet-day" curve is the sidereal hour (referred to the first point of Aries). The sidereal time corresponding to 0000 GMT for the middle of each month is given in the table in Appendix II.

XIII - CONCLUSION

Except for very strong interference produced by thunder storms, typical of the summer period in this latitude,this station is placed in a very quiet location.

The riometer records are quite free from man made interferences.

Due to the reasons mentioned before, the results on the absorption deduced from the "quiet-day" curve as it stands now, should be considered qualitative rather than quantitative information.

More results with consistent operation of the riometer are needed and provide data for a detailed study of the seasonal variation of non-deviative absorption.

This station will continue its operation and will provide data on ionospheric absorption as during the cooperative program for the International Quiet Sun Year (1964-1965).

Data will be sent to the World Data Center, as established in the Guide to International Data Exchange, CIG - IQSY Committee. The recordings are reproduced in the AFCRL publication Geophysics and Space Data Bulletin.

References :

1) Little, C.G., and Leinbach, H. - "The Riometer"-A Device for the Continuous Measurements of Ionospheric Proceedings of IRE, Feb. 1959, Vol.47, pp. 315-320 .

2) Little, C.G., and Leinbach, H. - "Some Measurements of High-latitude Ionospheric Absorption Using Extra-terrestrial Radio Waves" - Proceedings of IRE, Jan. 1958, Vol. 46, pp. 334-348.

3) Mitra, A.P., and Shain, C.A. - "The Measurements of the Ionospheric Absorption Using Observations of 18.3 MHz Cosmic Radio Noise" - J. Atmosph. & Terrestrial Physics, Vol. IV, pp. 203-218, 1953.

4) URSI - AGI Committee - letter in"Questionnaire on Ionospheric Absorption Measurements" - A2, Appendix A,Sept.15, 1958.

5) Lusignan, B.B. - "Cosmic Noise Absorption Measurements at Stanford, California and Pullman (Washington) " J. G.R., Vol. 65 and 12, Dec. 1960, pp. 3896 - 3902 .

6) "Riometer Measurements, Data Summary nº 1,January to December 1958" - Radioscience Laboratory, Stanford Electronics Laboratories - Stanford University, Nov. 1959.

7) Goldman, S.C. and Horowitz, S. - "Global Riometer Measurements" .

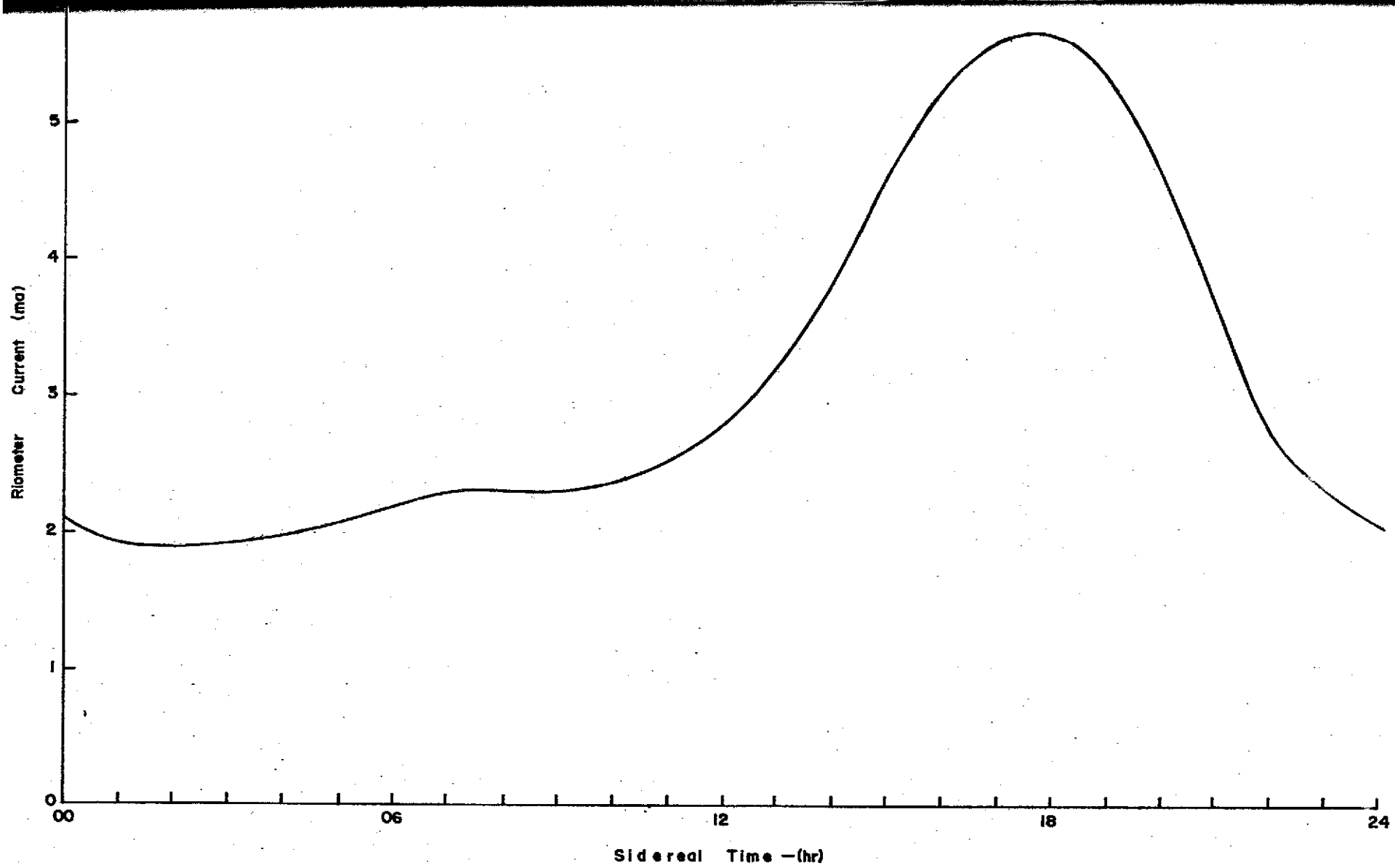

Fig. 1 - QUIET-DAY CURVE

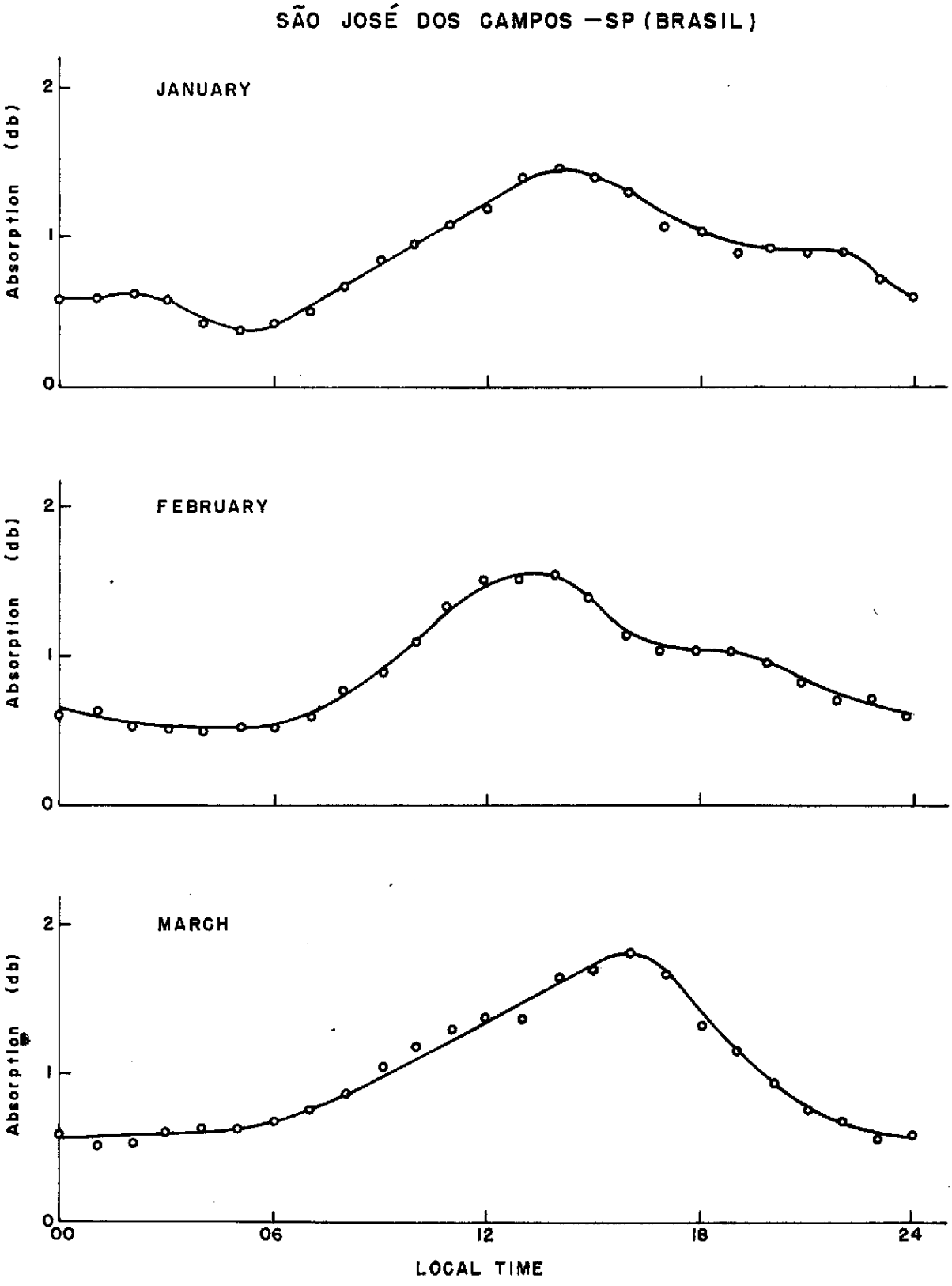

Fig. 2 – MEDIAN MONTHLY ABSORPTION CURVES (January – March 1966)

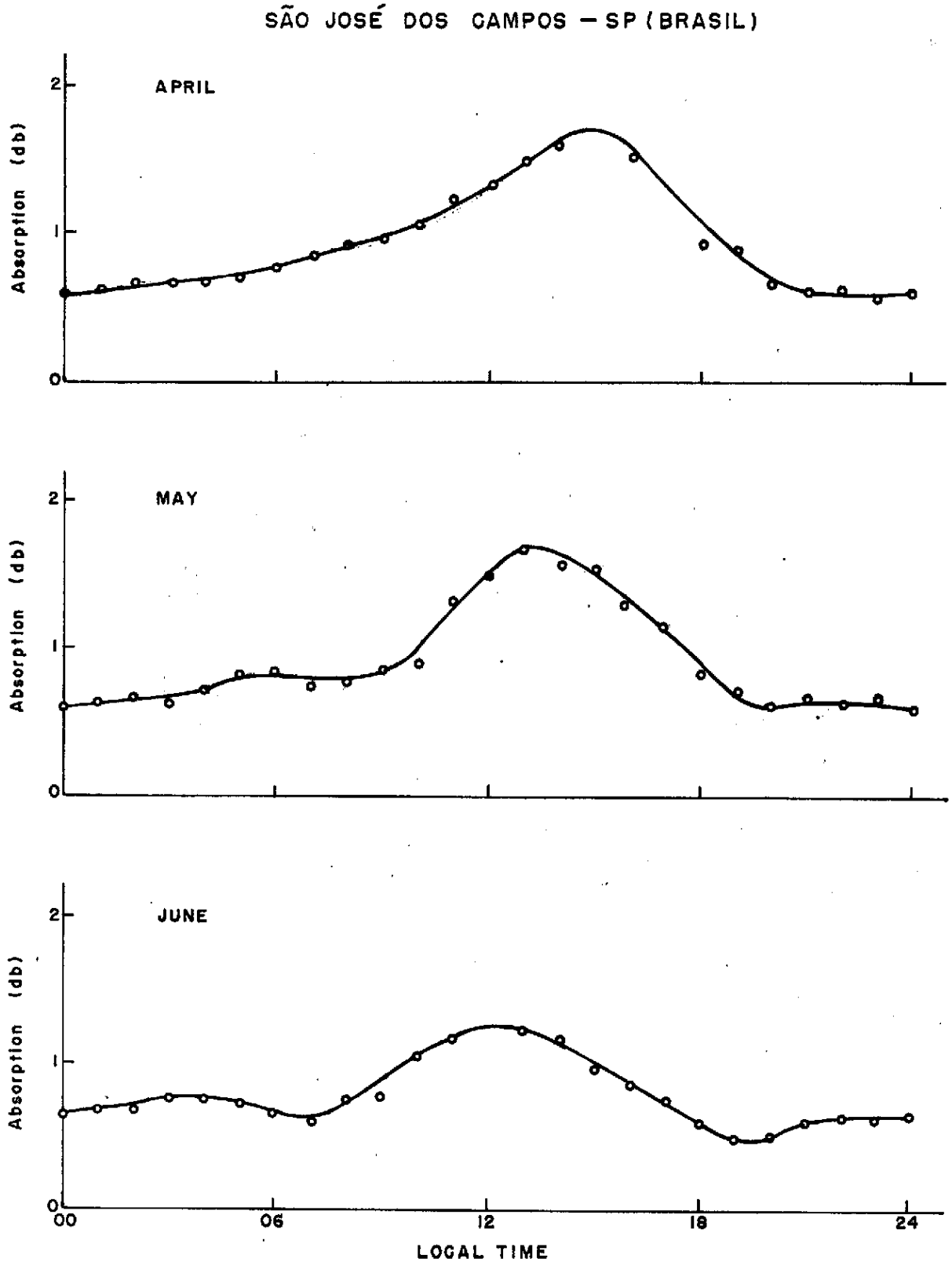

Fig. 3 – MEDIAN MONTHLY ABSORPTION CURVES (April – June 1966)

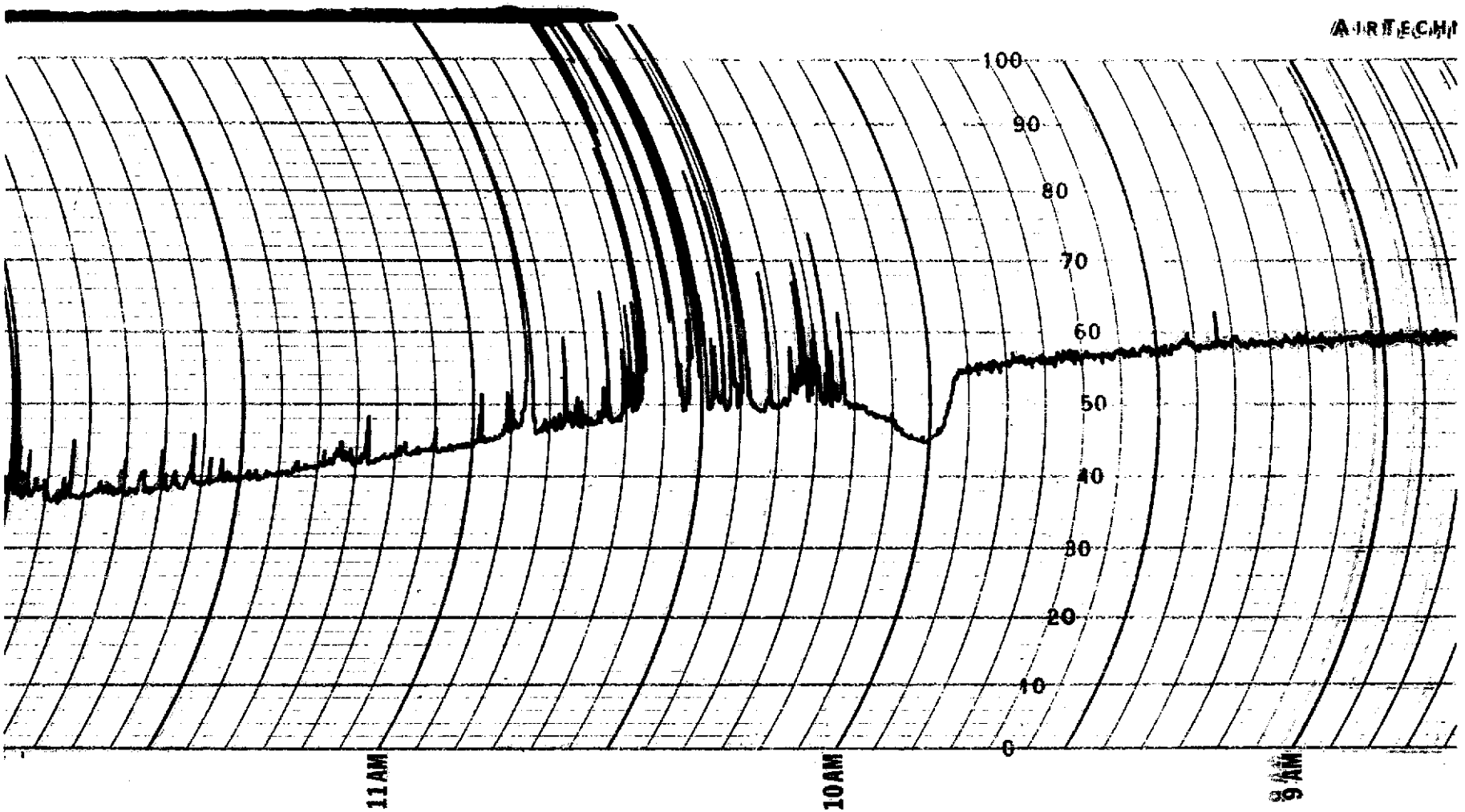

Fig. 4 - SCNA associated to the flare of 20 March 1966 (importance 3) and sucessive long duration absorption.

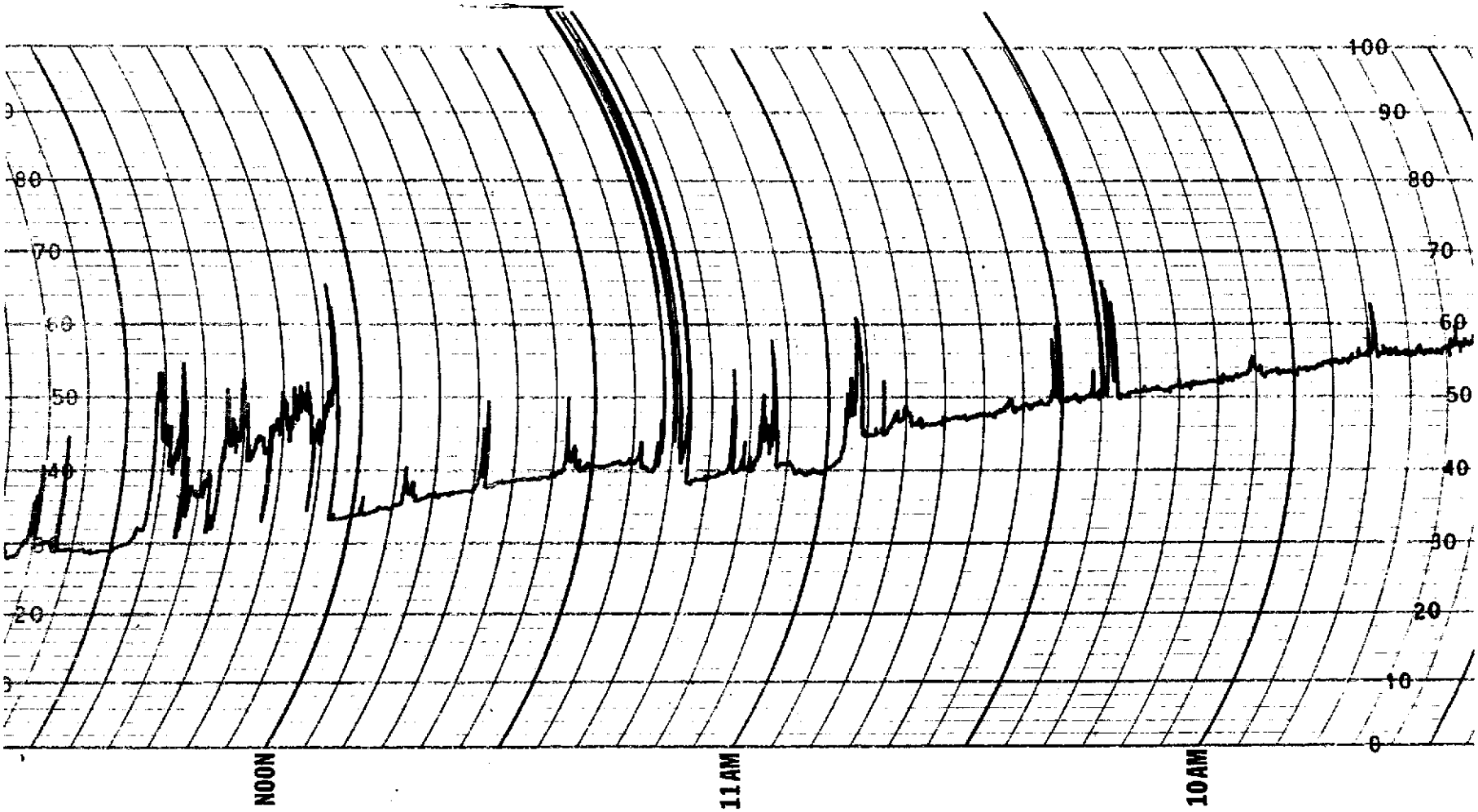

Fig. 5 - SCNA associated to the importance 2 flare of 29 March 1966 (1137 -1247 UT).

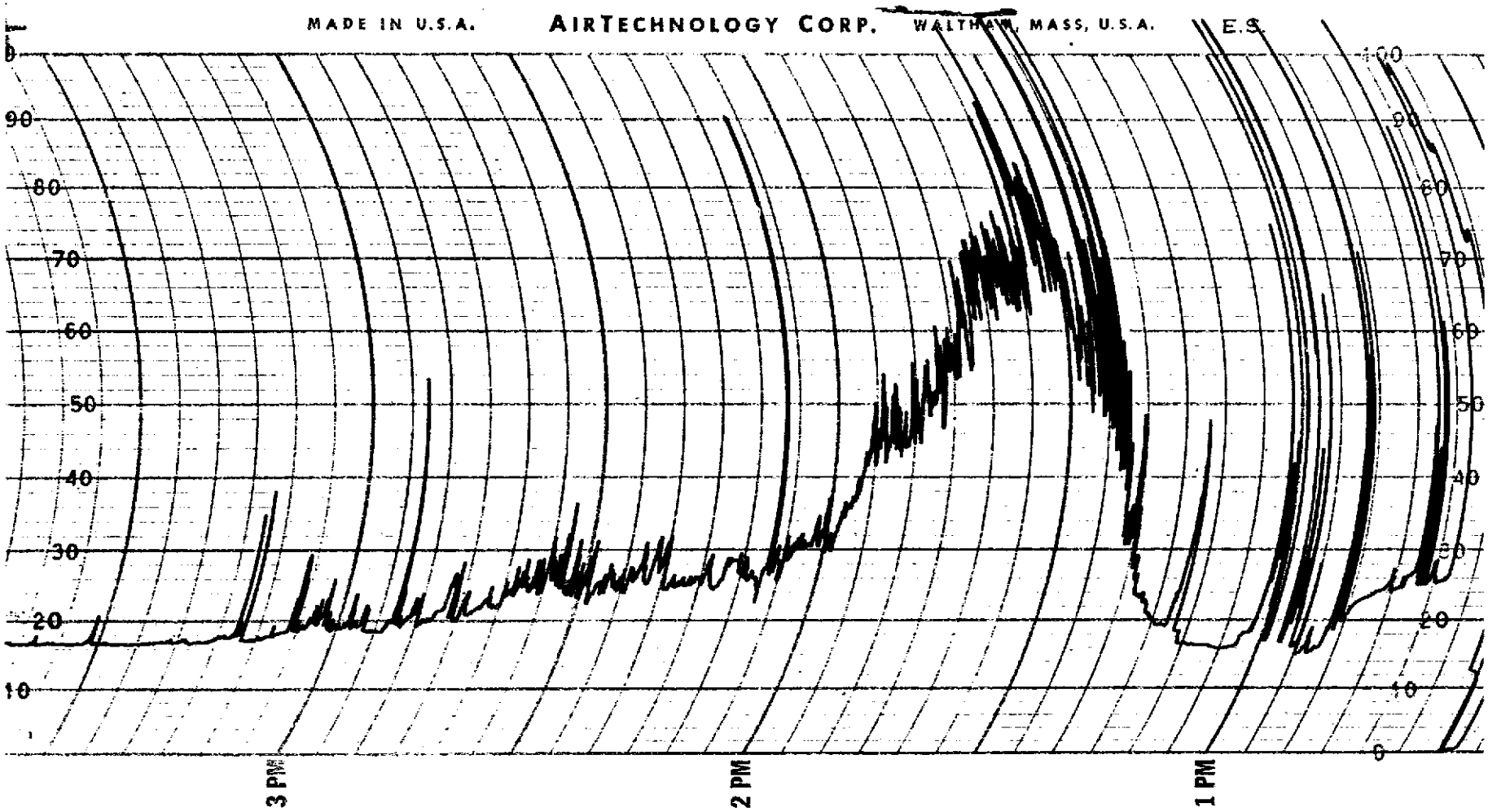

Fig. 6 - Flare of importance 2 between two type II bursts. See also the strong type IV burst which began at 1320 UT, immediately preceeded by the second type II burst.

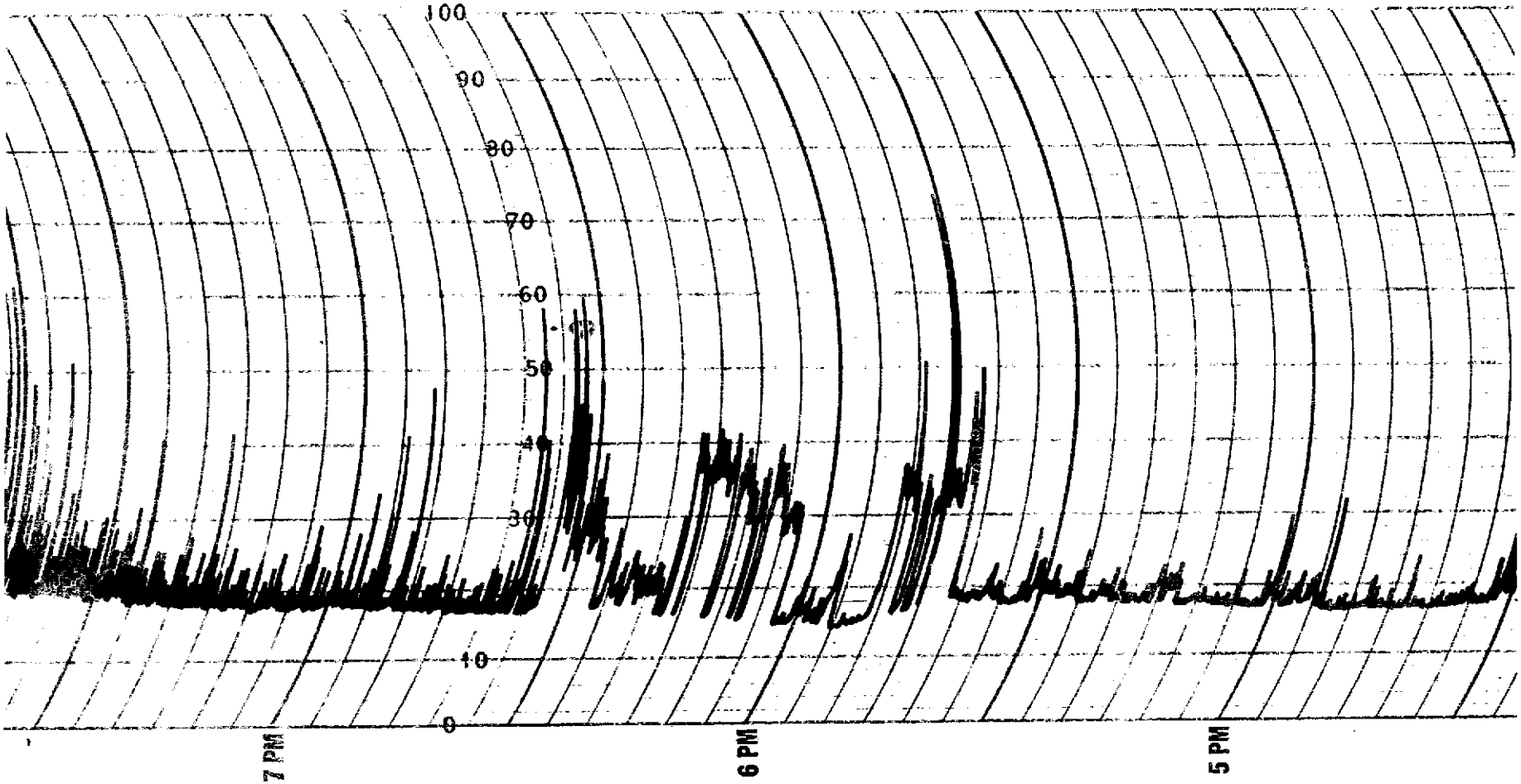

Fig. 7 - SCNA associated to the importance 2 flare of 1 April 1966. Strong man made interferences disturbed the absorption recording.

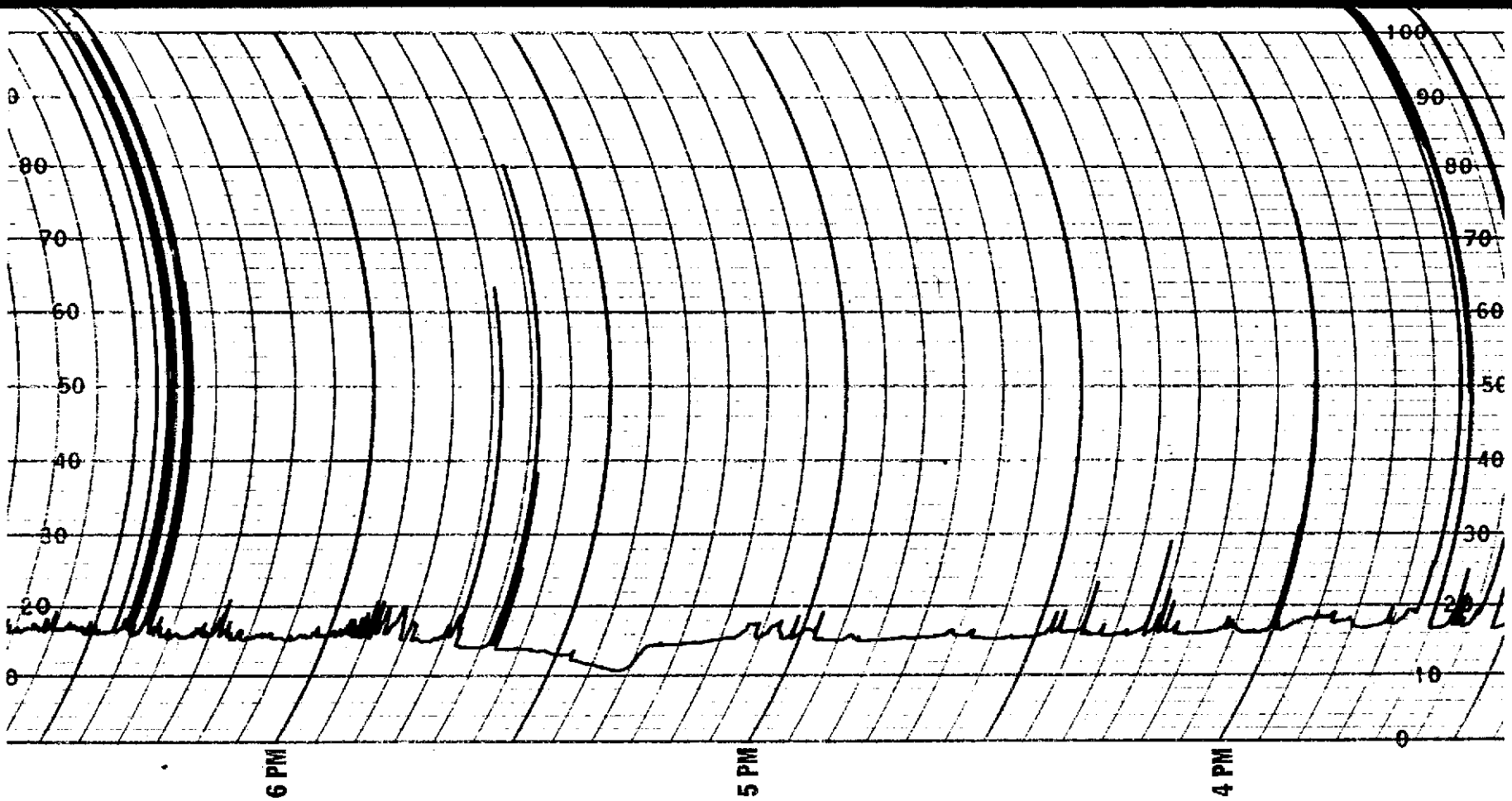

Fig. 8 - SCNA due to the importance 1 flare of 12 April 1966. The peak of absorption, as observed with the Riometer of SJC, coincided in the time with the maximum phase of the flare (1721 UT).

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Comissão Nacional de Atividades Espaciais
São José dos Campos - SP

MEAN VALUE OF ABSORPTION DURING THE FIRST MINUTE OF EACH HOUR

Station ..... - SJ
Month ..... - January
Year ..... - 1966
Riometer ..... - Mark II

Lat. ..... - 23°12'43"S
Long. ..... - 45°51'35"W
DIP ..... - 22.5°S
Mag. Lat. ..... - 11.7°
Alt. ..... - 623 m

Freq. ..... - 30 MHz
Bandwith ..... - 30 KHz
Diode Load Resist..... - 750 ohm
Audio Threshold ..... - 3
Int. Time ..... - 4 sec
ACG Time ..... - 4 sec

TABLE V

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	0.72	0.97	0.90	0.79	0.61	0.61	0.61	0.41	0.53	0.49	0.45	0.64	0.64	0.79	1.00	1.07	1.07	1.24	1.24	1.07	1.00	0.76	0.90	0.90
2	0.76	1.04	0.68	0.57	0.61	0.53	0.61	0.45	0.41	0.37	0.45	0.61	0.61	0.83	1.00	1.14	1.21	1.40	1.46	1.27[S]	1.07[S]	0.76	0.61[S]	0.64[S]
3	0.61	0.64[S]	0.68[S]	0.45[S]	0.49[S]	0.53	0.41	0.37	0.33	0.33	0.37	0.57	0.79	0.97	1.14	1.27	1.33	1.49	1.33[S]	1.24	1.07[S]	0.76[S]	0.61[S]	0.90[S]
4	0.76	0.93	0.68	0.57	0.61	0.61	0.64	0.49	0.45	0.45	0.57	0.72	0.72	1.04	1.14	1.27[S]	1.55[S]	1.58[S]	1.27[S]	0.97	1.04[S]	0.72[S]	0.61[S]	0.90[S]
5	c	c	c	c	c	c	c	c	c	c	c	c	c	0.79	1.07	1.17	1.27[S]	1.17[S]	1.17[S]	1.21	1.00	0.72[S]	0.61[S]	0.64
6	0.79	0.72	0.72	0.61	0.49	0.53	0.68	0.45	0.45	0.33	0.37	0.68	0.64	0.93	1.14	1.14	1.33	1.58	c	c	c	c	c	c
7	c	c	c	c	c	c	c	c	c	c	0.29	0.57	0.68	0.93	1.07	1.21	1.30	1.52	1.00[S]	1.40[S]	0.97[S]	0.97[S]	0.61[S]	0.93[S]
8	0.83	1.00	0.79	0.61	0.61	0.64	0.68	0.49	0.33	0.41	0.49	0.72	0.68	0.93	1.07	1.14	1.43	1.52	1.70	1.79	1.37[S]	1.10[S]	1.04	0.93
9	0.83	1.00	0.72	0.83	0.83	0.86	0.79	0.61	0.57	0.61	0.72	0.83	0.97	0.97	1.07	1.24	1.52[S]	1.79	1.64	1.76	1.17	0.64[S]	0.61[S]	0.68[S]
10	0.86[S]	1.04	0.97	0.83	0.83	0.64	0.72	0.53	0.61	0.49	0.61	0.68	0.86	0.97	1.07	1.07	1.24	1.37	1.37	1.76	1.30	1.07	0.61[S]	0.68
11	0.86	0.83	0.76	0.61	0.61	0.64	0.53	0.41	0.49	0.37	0.37	0.53	0.64	0.86	0.90	0.90	1.17	1.27	1.27	1.73	1.14	1.04	0.61[S]	0.97
12	0.90	0.83	0.76	0.61	0.61	0.57	0.33	0.41	0.33	0.41	0.41	0.41	0.64	0.86	0.90	1.04	1.17	1.21	1.24	1.70	1.24	0.90	0.90	0.68
13	0.79	0.86	0.79	0.61	0.49	0.57	0.37	0.29	0.21	0.33	0.37	0.45	0.57	0.79	0.90	0.97	1.04	1.30	1.21	1.30	1.10	1.04	1.04	1.10
14	0.93	1.10	1.00	0.83	0.83	0.68	0.61	0.49	0.41	0.49	0.41	0.53	0.68	0.97	1.00	1.17	1.40	1.49	1.61	1.17[S]	1.10[S]	0.64	0.61	0.72
15	0.57	0.64	0.57	0.61	0.61	0.61	0.61	0.53	0.29	0.41	0.57	0.61	0.86	1.00	1.10	1.17	1.33[S]	1.30[S]	1.10[S]	1.17[S]	1.49	0.90	0.61	0.72

TIME - UT

Month: January
Year: 1966

TABLE VI

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
16	0.97	0.90	0.57	0.61	0.83	0.72	0.64	0.53	0.33	0.41	0.53	0.61	0.97	1.14	1.17	1.37	1.46	1.33	1.67	1.52	1.49	1.33	1.04	1.14
17	1.27	1.14	0.79	0.61	0.64	0.72	0.64	0.57	0.37	0.45	0.53	0.90	c	c	0.97	1.21	1.43	1.64	1.64[5]	1.37[5]	1.17[5]	1.04[5]	1.04[5]	1.04
18	0.90	0.90	0.57	0.61	0.53	0.41	0.21	0.17	0.21	0.25	0.41	0.68	0.97	1.10	1.24	1.37	1.49	1.14	0.79	0.93	1.00	1.04	1.04	1.04
19	0.93	0.93	0.79	0.61	0.61	0.64	0.49	0.45	0.45	0.57	0.61	0.61	1.07	1.14	1.27	1.30	1.58	1.58	1.58	1.64	1.00	0.64	0.64	0.76
20	0.93	0.49	0.61	0.61	0.53	0.64	0.53	0.41	0.29	0.37	0.57	0.86	0.93	1.07	1.21	1.24	1.67	1.70	1.85	1.73	1.73	1.33	0.90	1.04
21	1.07	0.97	0.57	0.61	0.64	0.68	0.53	0.53	0.49	0.53	0.68	0.76	0.93	1.07	1.21	1.52	1.67	1.85	1.56	1.40	1.43	1.33	1.04	1.21
22	1.14	0.97	0.61	0.61	0.64	0.68	0.57	0.57	0.53	0.45	0.83	0.76	0.93	1.07	1.17	1.43	1.61	1.33	1.40	0.97	1.10	1.04	1.07	1.07
23	1.00	1.21	0.83	0.61	0.64	0.68	0.61	0.53	0	0.67	0.72	0.86	0.97	1.21	1.37	1.65	1.87	1.96	1.79	1.37	1.10	1.04	1.07	1.07
24	1.14	1.21	0.83	0.83	0.68	0.72	0.61	0.57	0.68	0.53	0.76	0.72	0.97	1.07	1.33	1.58	1.82	1.64	1.49[5]	1.52[5]	1.07[5]	1.04[5]	1.07[5]	1.10[5]
25	1.17	1.00	1.07	0.61	0.90	0.72	0.53	0.41	0.37	0.49	0.68	0.76	1.07	1.07	1.30	1.64	1.82	1.82[5]	1.49[5]	1.30[5]	1.07[5]	1.04[5]	1.10[5]	1.27[5]
26	1.46	1.24	1.07	0.83	0.90	0.68	0.86	0.68	0.57	0.64	0.72	0.64	0.86	1.07	1.27	1.37	1.64[5]	c	1.46	0.86	1.04[5]	1.04[5]	0.97[5]	0.90
27	0.83[5]	0.79[5]	0.61[5]	0.83	0.68	0.76	0.61	0.49	0.41	0.49[5]	0.53	0.64[5]	0.72[5]	0.86	0.86	1.17	1.21	1.24	1.46	1.55	1.04[5]	0.61	0.68[5]	0.79[5]
28	0.61[5]	0.57	0.61	0.49	0.68	0.57	0.45	0.37	0.45	0.45	0.57	0.79	0.86	0.90	1.10	1.24	1.46	1.43	1.30	c	c	c	c	0.79
29	0.64	0.57	0.49	0.61	0.61	0.61	0.49	0.41	0.37	0.41	0.41	0.53	0.72	0.79	0.90	1.17	1.40	1.61	1.43	1.52	1.04	0.86	0.97	0.93
30	1.10	0.79	0.61	0.61	0.61	0.61	0.49	0.29	0.37	0.45	0.49	0.72	0.79	0.93	1.00	1.21	1.40	1.58	1.43	0.79	1.04	1.04	1.14	1.37
31	1.14	1.04	0.83	0.83	0.93	0.93	0.53	0.33	0.25	0.64	0.49	0.53	0.86	0.83	0.86	1.10	1.30	1.30	1.14[5]	1.17	1.04	0.90	0.72	c
Count	29	29	29	29	29	29	29	29	29	29	30	30	29	30	31	31	31	30	30	29	29	29	29	29
UQ	1.07	1.04	0.83	0.61	0.83	0.72	0.64	0.53	0.49	0.53	0.68	0.76	0.97	1.07	1.21	1.37	1.58	1.64	1.61	1.55	1.24	1.04	1.04	1.07
Median	0.90	0.93	0.72	0.61	0.61	0.64	0.61	0.45	0.41	0.45	0.53	0.68	0.86	0.97	1.10	1.21	1.40	1.49	1.43	1.30	1.07	1.04	0.90	0.93
LQ	0.76	0.79	0.61	0.61	0.61	0.57	0.49	0.41	0.33	0.37	0.41	0.57	0.68	0.86	1.00	1.14	1.27	1.30	1.24	1.07	1.04	0.76	0.61	0.72

TIME - UT

P. R. - CNPq.
Comissão Nacional de Atividades Espaciais
São José dos Campos - SP - Brasil

MEAN VALUE OF ABSORPTION DURING THE FIRST MINUTE OF EACH HOUR

Station	- SJ	Lat.	- 23°12'43"S	Freq.	- 30 MHz
Month	- February	Long.	- 45°51'35"W	Bandwith	- 30 KHz
Year	- 1966	DIP	- 22.5°S	Diode Load Resist.	- 750 ohm
Riometer	- Mark II	Mag. Lat.	- 11.7°S	Audio Threshold	- 3
		Alt.	- 623 m	Int. Time	- 4 sec
				ACG Time	- 4 sec

TABLE VII

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	0.90	1.04	0.83	0.76	0.83	0.76	0.49	0.53	0.53	0.61	0.57	0.76	0.97	1.10	1.17	1.27	0.86	~	~	~	0.90	0.90	1.14	1.43
2	1.27	1.40	0.83	0.86	0.83	0.57	0.63	0.57	0.49	0.61	0.61	0.76	0.86	1.07	1.24	1.33	1.46	1.24	1.27	1.04	1.04	1.07	1.04	1.04
3	0.93	0.83	0.49	0.53	0.53	0.49	0.29	0.25	0.04	0.45	0.37	0.33	0.45	0.45	0.53	1.43	1.49	1.58	1.46	1.14	1.04	0.90	1.04	1.04
4	0.93	0.68	0.72	0.72	0.64	0.61	0.57	0.49	0.49	0.61	0.57	0.68	0.90	1.04	1.21	1.52	1.40	1.58	1.43	1.14	1.04	1.04	1.17	1.07
5	0.93	0.68	0.72	0.76	0.68	0.64	0.53	0.41	0.49	0.64	0.61	0.90	0.93	1.00	1.33	1.52	1.52	1.30	1.00	0.97	0.61	0.90	0.79	0.72
6	0.61	0.49	0.49	0.53	0.57	0.57	0.41	0.37	0.41	0.49	0.53	0.61	0.93	0.97	1.10	1.37	1.46	1.27	0.97	0.68	1.04	1.07	0.83	0.86
7	0.72	0.72	0.49	0.76	0.57	0.61	0.41	0.41	0.49	0.53	0.53	0.76	0.78	0.97	1.17	1.37	1.37	1.52	1.21	0.97	1.04	1.07	1.07	0.86
8	0.72	0.49	0.49	0.57	0.61	0.61	0.49	0.45	0.53	0.49	0.57	0.64	0.79	0.90	1.21	1.52	1.43	1.76	1.30	1.07	1.04	1.07	1.10	0.90
9	0.76	0.72	0.72	0.79	0.72	0.64	0.68	0.57	0.61	0.61	0.68	0.76	0.97	1.07	1.24	1.26	1.58	1.90	1.58	1.37	1.33	1.07	1.14	0.90
10	0.76	0.72	0.72	0.57	0.64	0.49	0.49	0.37	0.49	0.49	0.53	0.61	0.90	1.04	1.37	1.55	1.52	1.97	1.58	1.04	1.04	0.97	0.90	0.83
11	0.64	0.72	0.49	0.57	0.64	0.53	0.49	0.53	0.49	0.53	0.64	0.76	0.86	1.14	1.33	1.67	1.58	1.85	1.55	1.04	1.04	1.10	1.17	0.97
12	0.76	0.72	0.72	0.57	0.68	0.53	0.53	0.45	0.57	0.53	0.68	0.76	0.93	1.10	1.40	1.58	1.43	1.55	1.55	1.67	1.04	0.72	0.64	0.86
13	0.64	0.72	0.49	0.61	0.68	0.57	0.57	0.42	0.57	0.49	0.57	0.79	0.90	1.10	1.30	1.58	1.37	1.17	1.24	1.04	1.04	0.72	0.57	0.86
14	0.79	0.72	0.72	0.79	0.72	0.61	0.61	0.57	0.68	0.76	0.72	0.79	0.79	1.04	1.40	~	1.46	1.43	1.49	1.33	1.33	1.43	1.37	1.52
15	1.40	1.07	1.07	0.93	0.72	0.83	0.64	0.45	0.57	0.57	0.61	0.79	0.86	1.14	1.33	1.73	1.67	1.55	1.49	1.62	1.82	1.76	1.40	1.55

TIME - UT

Month: February
Year: 1966

TABLE VIII

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
16	1.40	1.07	0.86	0.83	0.76	0.68	0.68	0.53	0.57	0.68	0.64	0.79	1.10	1.27	1.58	1.64	1.64	1.49	1.46	1.64	1.04	1.17	1.00	1.49
17	1.40	1.17	1.07	0.97	1.10	0.97	0.57	0.57	0.68	0.72	0.76	0.79	0.93	1.24	1.49	1.55	1.24[5]	1.33	1.00	0.90	1.33	1.46	1.30	1.30
18	1.04	0.72	0.72	0.86	0.61	0.53	0.45	0.57	0.68	0.53	0.68	0.86	1.00	1.24	1.58	1.70	1.58[6]	1.33	1.14	1.33	1.04[5]	1.04[5]	1.04[5]	1.04
19	1.04	0.83	0.72	0.86	0.83	0.57	0.49	0.49	0.61	0.57	0.72	0.93	1.14	1.40	1.76	1.70	1.99	1.73	1.90	1.64	1.33	0.79	0.83	0.68
20	0.68	0.72	c	0.57	0.64	0.61	0.72	0.68	0.76	0.68	0.68	0.64	0.93	1.14	1.52	1.30[5]	1.55[5]	c	0.45[5]	0.61	0.64	0.79[5]	0.83[5]	0.72
21	0.68	0.72	0.53	0.57	0.57	0.57	0.61	0.53	0.49	0.45	0.61	0.72	0.97	1.24	1.61	1.79	1.79	1.99	1.40[5]	1.33[5]	1.07[5]	0.83[5]	0.76	0.72
22	0.83[5]	0.83[5]	0.53[5]	0.57[5]	0.61[5]	0.41[5]	0.33	0.45	0.53	0.37	0.41	0.41	0.61	0.97	1.52	1.70	1.93	1.67	c	1.64	1.70	1.52	1.40	1.10
23	1.07	0.83	0.79	0.83	0.72	0.64	0.53	0.53	0.57	0.49	0.61	0.61	0.86	1.14	1.52	1.30	1.49	1.30	1.07[5]	1.04	0.93[6]	1.10[6]	0.90[5]	0.97
24	0.83	0.72	0.57	0.61	0.64	0.49	0.49	0.61	0.61	0.49	0.61	0.49	0.97	1.21	1.46	1.58	1.76	1.58	1.37	1.33	1.40	1.27	1.17	0.79
25	0.83[5]	0.72[5]	0.45[5]	0.41[5]	0.29	0.29[5]	0.37	0.45[5]	0.49	0.41	0.45	0.61	0.79	1.04	1.10[5]	1.27	1.46	1.27	1.04[5]	1.04[5]	0.68[5]	0.49[5]	0.57	0.64
26	0.72	0.49	0.57	0.45	0.49	0.49	0.53	0.53	0.53	0.45	0.61	0.68	0.83	c	1.30	1.58	1.85	1.87	1.67	1.64	1.70	1.33	1.49	1.10
27	0.83	0.72	0.57	0.49	0.53	0.61	0.61	0.33	0.45	0.49	0.61	0.76	0.86	1.10	1.37	1.43	1.70	1.87	1.85	1.64	1.43	1.21	1.64	1.40
28	1.21	0.83	0.83	0.68	0.57	0.57	0.49	0.45	0.49	0.45	0.61	0.72	0.93	1.04	1.30	1.37	1.17	1.52	1.37	0.64	0.45	0.57	0.64	0.64
29																								
30																								
31																								
Count	28	28	27	28	28	28	28	28	28	28	28	28	28	27	28	27	28	26	26	27	28	28	28	28
UQ	1.04	0.83	0.72	0.79	0.72	0.64	0.61	0.57	0.61	0.61	0.68	0.79	0.97	1.14	1.52	1.64	1.67	1.85	1.55	1.64	1.33	1.21	1.18	1.10
Median	0.83	0.72	0.72	0.61	0.64	0.57	0.53	0.49	0.53	0.53	0.61	0.76	0.90	1.10	1.33	1.52	1.52	1.55	1.40	1.14	1.04	1.04	1.04	0.97
LQ	0.72	0.72	0.49	0.57	0.57	0.53	0.49	0.42	0.49	0.49	0.57	0.61	0.83	0.97	1.21	1.37	1.43	1.30	1.07	1.04	1.04	0.83	0.83	0.79

TIME - UT

P. R. - CNPq
Comissão Nacional de Atividades Espaciais
São José dos Campos - SP - Brasil

MEAN VALUE OF ABSORPTION DURING THE FIRST MINUTE OF EACH HOUR

Station	- SJ	Lat.	- 23°12'43"S	Freq.	- 30 MHz
Month	- March	Long.	- 45°51'35"W	Bandwith	- 30 KHz
Year	- 1966	DIP	- 22.5°S	Diode Load Resist.	- 750 ohm
Riometer	- Mark II	Mag. Lat.	- 11.7°S	Audio Threshold	- 3
		Alt.	- 623 m	Int. Time	- 4 sec
				ACG Time	- 4 sec

TABLE IX

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	0.61	0.61	0.49	0.57	0.41[5]	0.41	0.41	0.49	0.57	0.61	0.68	0.76	0.93	1.27	1.46	1.37	1.17	0.79[5]	1.04[5]	1.04[5]	1.10	1.21	1.10	1.00
2	0.72	0.61	0.72	0.61	0.41	0.49	0.45	0.57	0.49	0.53	0.68	0.72	1.00	1.21	1.37	1.33	1.37	1.21[5]	1.04[5]	1.04[5]	1.14[5]	0.83[5]	0.76	0.68
3	0.61	0.61	0.53	0.61	0.45	0.53	0.49	0.53	0.53	0.57	0.68	0.90	1.04	1.37	1.58	1.37	1.37	1.49	1.33	1.67[5]	1.14	1.40	1.27	1.04
4	0.93	0.72	0.53	0.64	0.49	0.57	0.53	0.61	0.53	0.57	0.68	0.79	0.97	1.30	1.70	1.64	1.46	1.46	1.33	1.37	1.00	1.00	1.17	1.04
5	0.61	0.41	0.41	0.49	0.45	0.61	0.53	0.68	0.68	0.68	0.64	0.76	0.86	1.07	1.30	1.24	1.07	1.14	1.64	1.67	1.79	1.72	1.27	1.04
6	0.93	0.72	0.53	0.72	0.57	0.49	0.49	0.68	0.61	0.79	0.83	0.86	0.90	1.24	1.33	1.46	1.27	1.43	1.33	1.37	1.17	0.93	0.79	0.68
7	0.61	0.64	0.53	0.53	0.49	0.25	0.49	0.53	0.53	0.61	0.64	0.61	0.68	1.07	1.24	1.46	1.43	1.43	1.82	1.67	1.07	0.97	0.97	0.93
8	0.61	0.64	0.57	0.76	0.64	0.57	0.57	0.68	0.64	0.72	0.72	0.83	0.97	1.24	1.14	1.55	1.67	1.73	1.64	1.37	1.21	1.37	1.21	0.93
9	0.93	0.76	0.57	0.57	0.57	0.53	0.61	0.61	0.61	0.57	0.76	0.79	0.90	1.00	1.30	1.52	1.37	1.70	1.64	1.67	1.24	1.40	0.97	0.72
10	0.61	0.64	0.49	0.41	0.45	0.45	0.49	0.61	0.57	0.64	0.64	0.72	0.83	1.07	1.21	1.40	1.33	1.70	1.64	1.83	2.04	1.43	0.97	0.93
11	0.72	0.64	0.61	0.45	0.49	0.49	0.57	0.64	0.57	0.64	0.61	0.76	0.79	1.14	1.14	1.37	1.17	1.37	1.64	1.67	1.87	1.87	0.97	0.61[5]
12	0.61	0.64	0.49	0.29	0.53	0.53	0.61	0.64	0.64	0.72	0.79	0.72	0.86	1.07	1.21	1.49	1.30	1.07	1.64	1.40	1.14	1.07	0.64	0.61[5]
13	0.61[5]	0.68[5]	0.53[5]	0.33	0.49[5]	0.49	0.49	0.49	0.64	0.68	0.68	0.86	c	c	1.14	1.73	1.58	1.85	1.82	1.87[5]	1.90[5]	1.21[5]	1.00[5]	0.93[5]
14	1.07[5]	1.14	0.86[5]	0.90[5]	0.86	0.79	0.72	0.64	0.64	0.68	0.76	0.90	1.14	1.61	1.46	1.85	1.87	1.67[5]	1.04[5]	0.72	c	c	c	c
15	0.72	0.79	0.68	0.76	0.57	0.61	0.61	0.68	0.72	0.79	0.86	0.86	1.07	1.17[5]	1.40	1.55[5]	1.85	1.85	1.82[5]	1.73[5]	1.33[5]	1.24[5]	1.24[5]	0.93[5]

TIME - UT

TABLE X

Month: March
Year: 1966

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
16	0.72	0.49	0.57	0.41	0.45	0.53	0.68	0.61	0.76	0.79	0.76	0.76	0.83	1.07	1.04	1.17	1.21	1.33	1.33	1.73	1.64	1.24	1.00	0.93
17	0.93	0.72	0.61	0.61	0.64	0.57	0.68	0.61	0.72	0.79	0.83	0.79	0.86	0.97	0.86	0.97	1.21	1.33	1.82	1.93	1.67	1.24	1.40	1.43
18	1.33	1.17	0.90	1.04	1.04	0.83	0.76	0.76	0.79	0.79	0.83	0.97	1.14	1.27	1.30	1.37	1.49	1.64	1.67	1.93	2.20	1.99	1.40	1.43
19	1.46	1.17	1.07	1.07	0.97	0.83	0.97	0.79	0.76	0.68	1.07	0.97	1.07	1.27	1.14	1.33	1.00	1.33	1.85	2.30	2.20	1.70	1.40	1.30
20	1.07	1.21	1.10	1.10	1.10	1.17	0.86	0.68	0.76	0.76	1.72	1.27	1.21	0.64	0.90	1.33	1.14	1.33	1.85	2.30	2.23	2.30	1.70	1.46
21	1.07	1.21	1.14	1.24	1.14	1.40	1.10	0.76	0.79	0.72	0.83	1.00	1.14	1.21	1.46	1.27	1.43	1.33	1.67	1.82	1.04	0.93	0.93	1.07
22	1.10	0.86	0.83	0.61	0.68	0.72	0.61	0.64	0.68	0.64	0.79	0.93	1.07	1.46	1.07	1.43	1.43	1.64	1.85	1.99	1.49	1.14	1.27	1.07
23	0.97	0.90	0.83	0.64	0.57	0.57	0.68	0.64	0.72	0.72	0.79	0.93	1.07	0.86	1.55	1.24	1.40	1.64	1.70	1.99	2.30	1.73	0.93	0.61
24	0.41	0.57	0.57	0.41	0.53	0.64	0.72	0.68	0.72	0.72	0.79	1.07	1.14	1.30	1.52	1.37	1.70	1.64	1.70	1.85	2.17	1.33	0.93	1.07
25	0.76	0.79	0.79	0.72	0.68	0.68	0.76	0.72	0.83	0.79	0.86	0.97	1.07	1.21	1.52	1.33	1.70	1.82	1.87	2.40	1.87	1.33	1.30	1.07
26	0.79	0.61	0.83	0.76	0.72	0.76	0.79	0.83	0.83	0.83	0.97	0.97	1.00	1.14	1.37	1.17	1.37	1.82	1.87	2.40	1.87	1.37	1.30	1.07
27	1.00	0.61	0.64	0.53	0.53	0.72	0.72	0.64	0.64	0.61	0.72	0.83	1.07	0.86	1.10	1.14	1.37	1.64	1.70	2.07	1.61	0.86	0.61	0.61
28	0.45	0.33	0.33	0.33	0.37	0.49	0.49	0.45	0.53	0.57	0.64	0.68	1.07	0.83	1.07	1.14	1.33	1.64	1.70	2.45	2.40	2.40	1.85	0.93
29	0.68	0.53	0.53	0.53	0.41	0.57	0.53	0.57	0.64	0.57	0.64	1.14	1.14	1.07	1.70	1.55	1.67	1.64	1.90	1.61	1.61	1.27	0.72	0.93
30	0.68	0.68	0.57	0.57	0.61	0.61	0.57	0.49	0.53	0.53	0.68	0.90	1.17	2.35	1.55	1.24	1.33	1.64	c	2.12	2.28	1.79	1.70	1.43
31	1.14	1.00	0.79	0.68	0.68	0.86	0.86	0.76	0.76	0.79	0.83	0.83	1.00	1.04	1.04	1.21	1.04	1.64	1.90	2.15	2.28	1.79	1.30	1.07
Count	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	30	31	30	30	30	30
UQ	1.00	0.90	0.83	0.76	0.68	0.76	0.76	0.68	0.76	0.79	0.83	0.97	1.14	1.27	1.52	1.52	1.58	1.70	1.85	2.12	2.20	1.77	1.30	1.07
Median	0.76	0.68	0.57	0.61	0.53	0.57	0.61	0.64	0.64	0.68	0.76	0.86	1.04	1.17	1.30	1.37	1.37	1.64	1.70	1.83	1.67	1.33	1.17	0.93
LQ	0.61	0.61	0.53	0.45	0.45	0.49	0.49	0.57	0.57	0.57	0.68	0.76	0.86	1.04	1.10	1.24	1.21	1.33	1.33	1.40	1.14	1.07	0.93	0.61

TIME - UT

P. R. - CNPq.
Comissão Nacional de Atividades Espaciais
São José dos Campos - SP - Brasil

MEAN VALUE OF ABSORPTION DURING THE FIRST MINUTE OF EACH HOUR

Station	- SJ	Lat.	- 23°12'43"S	Freq.	- 30 MHz
Month	- April	Long.	- 45°51'35"W	Bandwith	- 30 KHz
Year	- 1966	DIP	- 22.5°S	Diode Load Resist.	- 750 ohm
Riometer	- Mark II	Mag. Lat.	- 11.7°S	Audio Threshold	- 3
		Alt.	- 623 m	Int. Time	- 4 sec
				ACG Time	- 4 sec

TABLE XI

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	0.93	0.61	0.61	0.37	0.53	0.61	0.61	0.64	0.68	0.76	0.83	0.83	1.04	0.90	0.90	c 93	1.33	1.33	1.10	1.40	1.24	0.90	1.46	1.46
2	1.55	1.14	0.72	0.57	0.64	0.72	0.72	0.86	0.83	0.83	1.00	1.07	1.17	0.86	1.10	1.21	1.04	1.33	1.58	1.67	0.76	0.79	0.41	0.61
3	0.49	0.41	0.45	0.45	0.49	0.61	0.41	0.45	0.53	0.57	0.64	0.83	0.90	0.64	0.61	0.76	0.61	0.76	1.14	1.10	1.27	0.90	0.61	0.61
4	0.49	0.45	0.49	0.64	0.53	0.61	0.53	0.64	0.68	0.61	0.72	0.93	1.10	1.04	1.07	0.76	0.76	0.76	1.46	1.43	1.04	0.57	0.61	0.41
5	0.41	0.37	0.33	0.29	0.41	0.53	0.57	0.57	0.57	0.57	0.79	0.86	1.00	1.14	1.07	0.86	1.04	1.04	1.17	1.17	0.79	0.61	0.61	0.61
6	0.53	0.53	0.57	0.49	0.61	0.61	0.72	0.68	0.72	0.83	0.83	0.86	0.93	0.97	1.00	1.14	1.33	1.33	1.64	1.17	0.79	0.79	0.61	0.61
7	0.53	0.45	0.41	0.37	0.49	0.61	0.61	0.68	0.72	0.72	0.76	0.93	0.93	1.58	c	c	c	c	1.99	2.30	2.04	0.93	0.83	0.64
8	0.57	0.53	0.45	0.41	0.49	0.57	0.64	0.72	0.64	0.68	0.76	0.93	1.07	1.30	1.37	1.76	1.82	2.23	2.55	2.30	2.04	1.43	1.17	0.86
9	0.57	0.57	0.49	0.41	0.57	0.61	0.61	0.64	0.64	0.64	0.72	1.00	1.00	1.27	1.67	1.40	1.33	1.85	1.52	1.55	1.33	0.93	0.93	0.97
10	1.04	0.79	0.53	0.45	0.49	0.53	0.53	0.64	0.61	0.61	0.76	0.93	0.90	1.27	1.33	1.52	1.49	1.52	1.55	1.55	1.33	0.83	0.83	0.64
11	0.61	0.64	0.49	0.49	0.57	0.57	0.64	0.72	0.68	0.76	0.90	0.90	0.83	1.49	0.90	1.07	1.04	1.07	0.97	0.68	0.86	0.83	0.83	0.64
12	0.83	0.83	0.79	0.76	0.72	0.72	0.76	0.72	0.76	0.79	0.86	1.00	0.79	1.24	1.00	1.07	1.33	1.55	1.73	2.07	1.49	1.43	1.17	1.00
13	0.86	0.72	0.57	0.45	0.61	0.64	0.79	0.64	0.68	0.68	0.83	1.07	0.83	1.21	1.00	1.04	1.49	1.55	1.76	1.93	1.79	1.43	0.93	1.00
14	0.64	0.61	0.45	0.29	0.57	0.53	0.57	0.53	0.57	0.64	0.76	0.83	0.68	0.97	0.83	1.04	1.49	1.40	1.76	2.09	2.25	2.30	1.95	1.27
15	0.86	0.76	0.64	0.53	0.72	0.93	0.83	0.83	0.79	0.76	0.90	1.17	0.72	1.30	1.24	1.33	1.49	1.90	2.28	c	2.25	1.43	0.93	0.90

TIME - UT

TABLE XII

Month: April
Year: 1966

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
16	0.90	0.79	0.76	0.83	1.17	0.97	0.86	0.68	0.76	0.72	0.93	1.04	0.93	1.17	1.49	1.33	1.49	1.43	1.37	1.67	1.52	1.43	1.17	1.04
17	0.90	0.79	0.79	0.64	0.90	0.79	0.86	0.76	0.72	0.68	0.86	0.97	0.90	0.86	0.93	1.33	1.49	1.61	1.87	1.67	1.14	0.93	0.93	1.04
18	0.90	0.83	0.76	0.64	0.79	0.79	0.86	0.83	0.83	0.86	1.00	0.90	1.07	1.10	1.64	1.82	2.22	1.93	2.17	2.15	1.55	0.93	0.97	0.93
19	0.76	0.86	0.79	0.68	0.76	0.68	0.68	0.68	0.68	0.79	0.93	1.00	1.04	1.21	1.46	1.82	2.22	2.30	2.58	2.15	1.40	0.83	0.86	0.93
20	0.68	0.83	0.68	0.72	0.86	0.72	0.68	0.68	0.68	0.76	0.86	0.93	0.79	1.21	1.58	1.82	2.22	2.30	1.90	1.43	1.14	0.83	0.61	0.53
21	0.41	0.57	0.57	0.68	0.93	0.72	0.68	0.64	0.83	0.86	1.00	0.93	0.61	1.14	1.43	1.82	1.85	1.99	1.90	2.17	1.43	0.93	0.97	0.76
22	0.53	0.79	0.76	0.72	0.79	0.79	0.83	0.79	0.79	0.93	1.00	0.93	1.07	1.00	1.43	1.82	1.85	1.67	1.79	1.07	0.83	0.61	0.64	0.45
23	0.45	0.45	0.61	0.68	0.79	0.64	0.72	0.72	0.79	0.90	0.93	0.86	1.07	⌣	⌣	⌣	⌣	⌣	⌣	1.30	1.17	0.83	0.86	0.79
24	0.57	0.68	0.72	0.76	0.83	0.79	0.79	0.72	0.79	0.90	1.00	1.10	1.27	1.07	⌣	1.49	1.52	1.70	1.85	1.33	0.93	0.83	0.86	0.57
25	0.61	0.72	0.68	0.61	0.76	0.79	0.79	0.76	0.79	0.83	0.97	0.68	0.90	0.93	0.79	1.04	1.07	1.56	1.76	1.46	1.17	0.93	0.64	0.29
26	0.25	0.49	0.37	0.57	0.57	0.72	0.64	0.61	0.72	0.79	0.90	0.64	1.00	0.90	1.40	1.82	1.85	1.70	1.87	1.49	1.46	1.17	1.00	1.04
27	0.93	0.79	0.76	0.72	0.72	0.76	0.64	0.68	0.72	0.72	0.72	0.79	0.97	1.00	1.40	1.49	1.55	1.58	1.61	1.49	1.46	0.93	0.90	0.61
28	0.61	0.57	0.45	0.64	0.64	0.68	0.76	0.72	0.79	0.83	0.90	0.83	0.93	1.00	1.49	1.49	1.55	1.76	1.93	1.49	1.46	0.93	0.90	0.64
29	0.61	0.61	0.49	0.68	0.68	0.68	0.76	0.68	0.72	0.76	0.83	0.68	0.97	0.97	1.04	1.33	1.58	1.76	1.61	1.52	1.46	0.93	0.90	0.53
30	0.64	0.33	0.33	0.57	0.57	0.64	0.68	0.68	0.68	0.83	0.90	0.72	1.04	0.93	1.33	1.82	1.90	1.79	1.93	1.52	1.46	1.17	1.04	0.68
31																								
Count	30	30	30	30	30	30	30	30	30	30	30	30	30	29	27	28	28	28	29	29	30	30	30	30
UQ	0.90	0.79	0.72	0.68	0.79	0.79	0.79	0.72	0.79	0.83	0.93	1.00	1.07	1.24	1.43	1.82	1.85	1.85	1.93	2.07	1.52	1.17	1.00	1.00
Median	0.61	0.64	0.57	0.61	0.64	0.68	0.68	0.69	0.72	0.76	0.86	0.93	0.97	1.07	1.24	1.33	1.49	1.61	1.76	1.52	1.40	0.93	0.90	0.68
LQ	0.53	0.49	0.45	0.45	0.53	0.61	0.61	0.64	0.68	0.68	0.76	0.83	0.83	0.93	1.00	1.04	1.33	1.33	1.52	1.33	1.04	0.83	0.64	0.61

TIME - UT

P. R. - CNPq.
Comissão Nacional de Atividades Espaciais
São José dos Campos - SP - Brasil

MEAN VALUE OF ABSORPTION DURING THE FIRST MINUTE OF EACH HOUR

Station ..... - SJ
Month ..... - May
Year ..... - 1966
Riometer ..... - Mark II

Lat. ..... - 23°12'43"S
Long. ..... - 45°51'35"W
DIP ..... - 22.5°S
Mag. Lat. ..... - 11.7°S
Alt. ..... - 623 m

Freq. ..... - 30 MHz
Bandwith ..... - 30 KHz
Diode Load Resist. ..... - 750 ohm
Audio Threshold ..... - 3
Int. Time ..... - 4 sec
ACG Time ..... - 4 sec

TABLE XIII

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	0.97	0.86	0.90	0.90	0.79	0.86	0.76	0.76	0.76	0.86	1.07	1.00	1.04	1.37	1.64	1.82	1.90	2.15	c	1.52	1.58	1.17	0.83	0.90
2	0.79	0.72	0.79	0.79	0.72	0.76	0.76	0.93	0.86	1.07	1.07	0.97	0.97	1.33	1.64	1.64	1.93	2.17	2.28	1.65	0.72	0.72	0.72	0.93
3	0.83	0.76	0.83	0.83	0.72	0.79	0.76	0.79	0.86	1.00	1.00	0.97	1.21	1.33	1.33	1.85	1.93	2.01	1.82	1.67	1.58	1.33	1.07	0.93
4	0.86	0.79	0.69	0.72	0.64	0.64	0.64	0.64	0.76	0.93	0.90	0.93	1.21	1.30	1.33	1.67	1.96	2.23	1.85	1.55	1.30	1.61	0.83	0.64
5	0.64	0.68	0.72	0.76	0.68	0.68	0.69	0.64	0.78	0.86	0.83	0.79	0.83	1.00	c	1.67	1.79	1.72	1.99	1.70	1.30	1.33	0.86	0.79
6	0.83	0.72	0.69	0.61	0.86	1.04	1.07	0.83	0.72	0.79	0.76	0.76	0.76	0.86	1.17	1.21	0.90	1.17	1.43	1.17	0.72	0.64	0.53	0.41
7	0.49	0.17	0.37	0.45	0.41	0.45	0.37	0.37	0.41	0.72	0.57	0.53	0.29	0.45	0.37	0.76	0.93	0.83	1.21	1.55	1.17	0.76	0.45	0.25
8	0.37	0.37	0.25	0.25	0.29	0.37	0.37	0.45	0.57	0.64	0.57	0.53	0.83	0.93	1.17	1.87	1.37	1.67	1.46	1.17	0.72	0.76	0.46	0.53
9	0.41	0.17	0.21	0.29	0.25	0.29	0.25	0.29	0.29	0.45	0.69	0.79	0.83	0.97	1.33	1.37	1.85	2.17	1.90	1.59	1.58	1.24	0.90	0.79
10	1.00	0.90	0.96	0.72	0.72	0.83	0.79	0.83	0.96	1.07	0.90	1.04	1.04	1.21	1.33	1.70	1.87	1.87	1.49	1.30	1.30	0.97	0.79	0.79
11	0.83	0.72	0.76	0.72	0.72	0.76	0.69	0.72	0.93	0.97	0.83	1.00	1.04	1.21	1.64	1.70	1.87	1.87	1.93	1.58	1.17	1.00	0.83	0.83
12	0.86	0.93	1.00	0.79	0.76	0.72	0.79	0.83	0.90	0.97	0.86	1.24	0.76	0.93	1.33	1.40	1.58	1.76	1.49	1.58	1.30	1.24	0.83	0.83
13	0.83	0.57	0.64	0.61	0.64	0.68	0.69	0.61	0.83	0.90	0.72	0.97	0.72	0.90	1.33	1.24	1.43	1.76	1.64	1.30	0.93	0.79	0.53	0.61
14	0.61	0.57	0.61	0.57	0.64	0.69	0.64	0.68	0.83	1.00	0.76	0.93	0.72	1.21	1.33	1.79	1.61	1.49	1.52	1.17	1.17	1.04	0.64	0.61
15	0.64	0.61	0.68	0.61	0.49	0.64	0.64	0.64	0.76	0.90	0.72	0.79	0.93	0.76	1.17	0.97	1.21	1.37	1.27	1.30	0.72	0.68	0.67	0.64

TIME - UT

Month: May
Year: 1966

TABLE XIV

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
16	0.49	0.53	0.61	0.57	0.61	0.68	0.61	0.64	0.83	0.97	0.68	0.90	0.93	0.90	1.17	1.27	1.49	1.40	1.14	1.17	0.92	0.72	0.61	0.68
17	0.57	0.57	0.68	0.57	0.53	0.64	0.49	0.61	0.76	0.90	0.68	0.61	0.93	0.90	1.17	1.27	1.24	1.52	1.55	1.30	"	0.83	0.72	0.72
18	0.61	0.61	0.72	0.72	0.64	0.64	0.57	0.61	0.76	0.83	0.64	0.61	0.90	0.90	1.21	1.43	1.55	1.40	1.27	0.93	0.72	0.72	0.72	0.76
19	0.64	0.63	0.72	0.64	0.57	0.64	0.64	0.64	0.93	0.90	0.83	0.57	"	"	"	1.46	1.72	1.55	1.55	1.30	1.21	0.83	0.64	0.57
20	0.68	0.61	0.76	0.67	0.68	0.68	0.61	0.76	1.00	0.83	0.90	0.79	0.86	0.90	1.33	1.79	1.72	1.64	1.70	1.30	1.21	1.07	0.79	0.61
21	0.64	0.68	0.68	0.61	0.68	0.64	0.64	0.72	0.93	0.76	0.76	0.76	0.86	0.90	1.21	1.33	1.61	1.58	1.55	1.30	1.33	0.86	0.72	0.57
22	0.53	0.57	0.61	0.64	0.61	0.64	0.61	0.64	0.93	0.86	0.83	0.86	0.97	1.33	1.67	1.82	2.12	1.90	1.70	1.30	1.24	0.86	0.83	0.68
23	0.83	0.90	0.90	0.86	0.93	0.86	0.93	1.00	1.24	1.04	1.07	0.83	0.83	0.90	1.37	1.37	1.67	1.58	1.55	1.17	0.76	0.76	0.53	0.64
24	0.93	0.64	0.72	0.61	0.64	0.64	0.64	0.64	0.79	0.68	0.68	0.68	0.79	0.90	1.21	1.37	1.67	1.49	1.21	0.93	0.64	0.57	0.49	0.57
25	0.45	0.49	0.61	0.49	0.41	0.41	0.49	0.49	0.68	0.61	0.68	0.68	0.53	0.76	1.21	1.55	1.43	1.49	1.58	1.30	1.24	0.83	0.79	0.86
26	0.64	0.61	0.64	0.67	0.64	0.68	0.61	0.72	0.83	0.64	0.76	0.64	0.79	0.86	0.79	0.97	1.30	1.24	1.58	1.70	1.64	1.40	1.24	1.43
27	1.33	0.79	0.76	0.76	0.76	0.68	0.76	0.76	0.90	0.57	0.76	0.76	0.93	1.17	0.97	1.14	1.33	1.24	1.21	0.93	0.68	0.61	0.37	0.53
28	0.53	0.41	0.57	0.64	0.61	0.53	0.45	0.53	0.68	0.53	0.72	0.72	0.76	1.33	1.70	1.58	1.76	1.49	1.30	1.21	1.04	0.64	0.68	0.57
29	0.64	0.72	0.76	0.64	0.76	0.64	0.68	0.83	0.97	0.79	0.93	0.97	0.90	1.17	1.43	1.46	1.76	1.82	1.70	1.58	0.79	0.64	0.61	0.79
30	0.68	0.79	0.68	0.68	0.76	0.64	0.64	0.76	0.90	0.61	0.79	0.68	0.76	0.90	0.97	1.07	1.10	1.14	0.93	0.72	0.68	0.57	0.64	0.64
31	0.68	0.61	0.57	0.61	0.64	0.61	0.64	0.83	0.83	0.68	0.68	0.68	0.90	0.90	0.97	1.21	1.37	1.52	1.58	1.17	1.40	1.00	0.97	1.04
Count	31	31	31	31	31	31	31	31	31	31	31	31	30	30	29	31	31	31	30	31	30	31	31	31
UQ	0.84	0.79	0.76	0.76	0.76	0.76	0.76	0.84	0.90	0.97	0.90	0.97	0.97	1.21	1.37	1.70	1.87	1.87	1.70	1.58	1.30	1.17	0.83	0.83
Median	0.68	0.64	0.68	0.61	0.64	0.68	0.64	0.72	0.83	0.86	0.76	0.79	0.86	0.90	1.33	1.46	1.67	1.58	1.55	1.30	1.17	0.83	0.72	0.64
LQ	0.53	0.53	0.61	0.57	0.57	0.64	0.57	0.61	0.72	0.64	0.68	0.68	0.76	0.90	1.17	1.21	1.33	1.40	1.27	1.17	0.72	0.68	0.53	0.57

TIME - UT

P. R. - CNPq.
Comissão Nacional de Atividades Espaciais
São José dos Campos - SP - Brasil

MEAN VALUE OF ABSORPTION DURING THE FIRST MINUTE OF EACH HOUR

Station ..... - SJ
Month ..... - June
Year ..... - 1966
Riometer ..... - Mark II

Lat. ..... - 23°12'43"S
Long. ..... - 45°51'35"W
DIP ..... - 22.5°S
Mag. Lat. ..... - 11.7°S
Alt. ..... - 623 m

Freq. ..... - 30 MHz
Bandwith ..... - 30 KHz
Diode Load Resist. ..... - 750 ohm
Audio Threshold ..... - 3
Int. Time ..... - 4 sec
ACG Time ..... - 4 sec

TABLE XV

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	0.90	0.79	0.72	0.76	0.72	0.69	0.76	0.79	0.93	0.90	0.90	0.93	0.76	1.04	1.30	1.07	1.10	0.90	0.93	0.72	0.69	0.61	0.61	0.61
2	0.61	0.57	0.57	0.68	0.72	0.79	0.79	0.93	0.86	0.86	0.86	0.90	1.04	1.17	1.58	1.85	1.82	1.92	1.58	1.17	1.07	0.72	0.45	0.49
3	0.49	0.68	0.57	0.61	0.61	0.61	0.57	0.64	0.61	0.61	0.61	0.49	0.76	1.04	1.17	1.43	1.43	1.27	1.17	0.72	0.72	0.45	0.41	0.37
4	0.49	0.72	0.68	0.72	0.72	0.72	0.72	0.76	0.68	0.57	0.57	0.61	0.76	1.04	1.17	1.43	1.43	1.55	1.30	0.97	0.76	0.68	0.41	0.33
5	0.37	0.45	0.49	0.61	0.57	0.64	0.86	0.97	0.90	0.76	0.79	0.61	0.76	0.76	0.90	0.93	1.07	0.93	0.93	0.72	0.76	0.29	0.21	0.17
6	0.13	0.37	0.41	0.53	0.64	0.68	0.79	0.90	0.79	0.72	0.76	0.57	0.76	0.79	0.90	0.93	1.07	0.93	0.93	0.72	0.76	0.53	0.33	0.29
7	0.37	0.53	0.57	0.61	0.57	0.61	0.61	0.83	0.53	0.53	0.49	0.21	0.76	0.79	0.93	0.97	1.07	0.93	0.93	0.76	0.79	0.57	0.37	0.49
8	0.41	0.57	0.61	0.61	0.68	0.61	0.76	0.83	0.83	0.79	0.72	0.93	0.76	0.79	0.97	1.00	1.07	1.21	1.21	1.24	1.14	0.86	0.57	0.37
9	0.49	0.61	0.61	0.64	0.64	0.61	0.64	0.72	0.57	0.68	0.45	0.57	0.49	1.07	1.21	1.27	1.24	1.21	1.30	0.97	0.57	0.41	0.45	0.41
10	0.53	0.64	0.64	0.64	0.61	0.64	0.76	0.79	0.68	0.79	0.64	0.79	0.76	1.07	1.24	1.00	1.24	1.21	0.93	0.69	0.61	0.41	0.41	0.41
11	0.53	0.68	0.64	0.64	0.53	0.61	0.68	0.72	0.61	0.97	0.64	0.79	0.76	1.10	1.27	1.04	0.86	0.93	0.61	0.69	0.53	0.45	0.49	0.45
12	0.57	0.72	0.68	0.68	0.68	0.61	0.61	0.72	0.53	0.64	0.61	0.49	0.76	1.10	1.30	1.07	0.86	0.61	0.72	0.69	0.64	0.68	0.53	0.49
13	0.64	0.64	0.68	0.68	0.61	0.61	0.61	0.64	0.49	0.72	0.61	0.49	1.04	1.10	1.04	1.33	1.24	1.17	0.97	0.69	0.86	0.68	0.49	0.41
14	0.57	0.64	0.72	0.68	0.61	0.68	0.68	0.72	0.64	0.57	0.61	0.76	1.04	1.10	1.33	1.10	1.14	1.17	1.17	0.79	0.90	0.72	0.53	0.45
15	0.57	0.64	0.53	0.61	0.57	0.57	0.64	0.79	0.61	0.45	0.57	0.49	0.76	1.10	1.37	1.67	1.79	1.58	1.30	1.04	1.00	0.76	0.68	0.64

TIME - UT

Month: June
Year: 1966

TABLE XVI

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
16	0.79	0.83	0.79	0.79	0.68	0.68	0.79	0.76	0.68	0.68	0.68	0.76	1.04	1.14	1.37	1.37	1.27	1.30	1.30	1.04	0.72	0.61	0.45	0.41
17	0.57	0.53	0.57	0.61	0.72	0.72	0.83	0.86	0.64	0.64	0.53	0.49	0.76	1.30	1.40	1.40	1.27	1.21	0.93	0.83	0.72	0.41	0.49	0.45
18	0.61	0.57	0.61	0.68	0.72	0.68	0.79	0.79	0.79	0.83	0.90	1.04	1.04	1.17	1.87	1.70	1.55	1.30	0.97	0.72	0.64	0.49	0.53	0.53
19	0.49	0.61	0.61	0.72	0.68	0.72	0.76	0.79	0.79	0.79	0.61	0.76	1.04	1.17	1.17	1.43	1.30	1.17	0.97	0.86	0.68	0.53	0.41	0.49
20	0.72	0.64	0.64	0.64	0.64	0.72	0.83	0.68	0.76	0.57	0.61	0.76	0.76	0.90	1.17	1.17	1.30	1.17	0.97	0.86	0.68	0.57	0.45	0.57
21	0.64	0.57	0.64	0.64	0.68	0.79	0.76	0.79	0.72	0.76	0.57	0.76	0.76	0.90	1.21	1.17	1.30	1.17	0.72	0.76	0.72	0.57	0.49	0.49
22	0.68	0.61	0.64	0.64	0.76	0.72	0.90	0.72	0.83	0.72	0.57	0.76	1.04	0.93	0.97	1.07	1.17	1.17	1.24	1.10	1.07	0.79	0.72	0.68
23	0.83	0.76	0.86	0.79	0.76	0.86	0.97	0.83	0.79	0.72	0.83	0.76	0.79	0.83	1.00	1.07	0.93	0.93	0.97	0.90	0.86	0.83	0.61	0.61
24	0.72	0.76	0.79	0.79	0.76	0.83	0.97	0.76	0.79	0.68	0.57	0.76	0.79	0.83	1.00	1.21	1.30	1.17	1.24	0.90	0.79	0.61	0.41	0.49
25	0.64	0.64	0.64	0.64	0.64	0.76	0.86	0.68	0.79	0.64	0.53	0.76	1.07	0.97	1.04	1.10	0.93	0.61	0.68	0.93	1.10	0.76	0.61	0.72
26	0.97	0.79	0.64	0.64	0.68	0.72	0.79	0.83	0.76	0.61	0.79	0.76	0.83	1.00	1.04	1.24	1.17	1.17	0.76	0.83	0.86	0.49	0.49	0.53
27	0.61	0.68	0.68	0.61	0.64	0.68	0.72	0.76	0.76	0.37	0.49	0.76	0.83	1.00	1.07	1.24	1.17	0.93	1.00	~	0.68	0.72	0.57	0.57
28	0.76	0.72	0.68	0.61	0.72	0.72	0.64	0.68	0.72	0.57	0.49	0.76	0.83	1.30	1.33	1.49	1.58	1.85	1.64	1.21	0.90	0.76	0.61	0.72
29	0.68	0.76	0.83	0.79	0.72	0.83	0.86	0.76	0.57	0.57	0.49	0.76	0.83	1.33	1.37	1.79	2.01	1.85	1.40	1.24	0.93	0.61	0.68	0.57
30	0.64	0.64	0.72	0.64	0.64	0.79	0.86	0.72	0.68	0.68	0.76	1.04	1.10	1.07	1.40	1.27	0.93	0.93	0.79	0.61	0.41	0.41	0.72	0.76
31																								
Count	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30
UQ	0.72	0.72	0.72	0.72	0.72	0.76	0.86	0.83	0.79	0.79	0.76	0.79	1.04	1.14	1.37	1.43	1.43	1.30	1.30	1.04	0.90	0.72	0.61	0.61
Median	0.61	0.64	0.64	0.64	0.68	0.68	0.76	0.76	0.72	0.68	0.61	0.76	0.79	1.07	1.17	1.21	1.24	1.17	0.97	0.86	0.76	0.61	0.49	0.49
LQ	0.49	0.57	0.57	0.61	0.61	0.61	0.64	0.72	0.61	0.57	0.53	0.57	0.76	0.90	1.00	1.07	1.07	0.93	0.93	0.72	0.68	0.45	0.41	0.41

TIME - UT

APPENDIX I

" EXPLANATION ON THE USE OF THE "QUIET-DAY" CURVE TO REDUCE THE RIOMETER DATA FROM SÃO JOSÉ DOS CAMPOS "

During the regular operation of the riometer at this site which started in March 1963, some equipment failure occurred for short periods. After each time the equipment failed, it was recalibrated and reset, but the output did not repeat exactly the former characteristics, presenting a different level on the daily recorded current. In order to reduce the current to absorption, an adequate "quiet-day" curve, must be used for the different periods of operation of the riometer.

For the period April 1 to July 24, 1963, the "quiet-day" curve is shown in Fig. 9 curve a. It was obtained with data acquired during the first few months of operation and should be considered as an approximation to the "quiet-day" curve.

Curve **b** in Fig. **9** was obtained as the basic " quiet-day " curve for our station (São José dos Campos).

Corrections should be introduced in this curve in order to compensate for the different levels of current which occurred after each time the equipment failed.

The adequate correction factor for the different periods of operation is indicated in the table below:

Period	Correction
Aug.1 - Dec.31 1963	Add 0.25 MA to the values of the "quiet-day" curve, Fig. 9 curve b.
Jan.1 - May 4 1964	Curve b of Fig. 9 is adequated for this period.
May 6 - Sept.5 1964	Divide the values of curve b in Fig. 9 by the factor 1.12 MA.
Sept.7 - Sept.8 1964	Divide the values of curve b in Fig. 9 by the factor 1.15 MA.

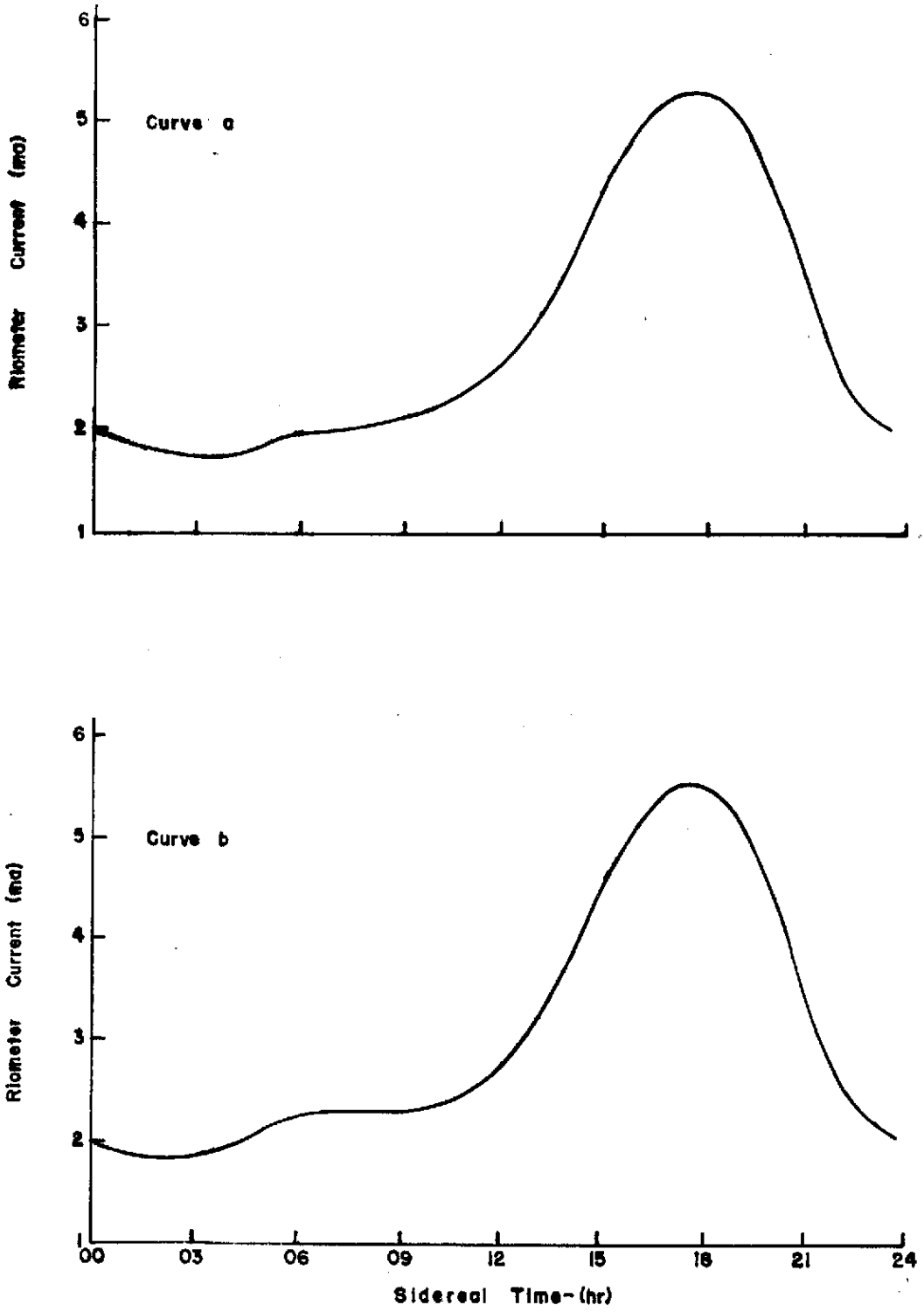

Fig. 9 — QUIET-DAY CURVE

APPENDIX II

" NOTE ON THE TIME SCALE OF THE "QUIET-DAY" CURVE , PRESENTED IN THE ABSORPTION MEASUREMENTS WITH RIOMETER DATA SUMMARY: REPORT Nº LAFE 9,12,16,17,22, 28,38,42.

In order to reduce the time scale of the "quiet-day" curve to the true sidereal time (referred to the first point of Aries) one should add 17h 36 m to the hours indicated in the figure showing the "quiet-day" curve. That is, the maximum value of the curve corresponds approximately to the sidereal hour 17h 36 m or SHA = 96º .

The table below indicates the sidereal time corresponding to 00:00 GMT for the middle of each month starting on 1963.

GMT hour	Month	Sidereal Time							
		1963		1964		1965		1966	
h..m..		h.....m...		h....m..		h....m..		h....m...	
00:00	Jan. 15	04	33	04	33	04	36	04	36
"	Feb. 15	06	35	06	35	06	38	06	38
"	Mar. 15	08	26	08	29	08	28	08	28
"	Apr. 15	10	28	10	30	10	30	10	31
"	May 15	12	26	12	30	12	27	12	29
"	Jun. 15	14	28	14	30	14	29	14	31
"	Jul. 15	16	26	16	28	16	27	16	29
"	Aug. 15	18	31	18	34	18	33	18	32
"	Sept.15	20	33	20	36	20	35	20	34
"	Oct. 15	22	31	22	34	22	33	22	32
"	Nov. 15	24	33	24	36	24	35	24	34
"	Dec. 15	02	31	02	34	02	33	02	32