

NATIONAL RADIO ASTRONOMY OBSERVATORY

MEMORANDUM

May 19, 1969

To: Those Listed Below
From: M. Balister
Subject: Interference Between Telescopes

Most of our radiometers are potential sources of narrow-band interference. A list of possible spurious signals is attached to this note.

The most likely source of inter-telescope interference is the Universal Local Oscillators which can generate up to 1 watt in the frequency range 1-2 GHz. We have had two cases of this occurring: (1) between lab and 140' and (2) 140' and 300'. In both cases the RF output was tuned within the pass band of the line receivers.

The interferometer and 42' link is also another known source of trouble, especially at 1347.5 ± 0.1 MHz. The link can be tuned off for some observations; however, the 1347.5 signal can still be seen at the 140' and 300' telescopes.

Spectral line observers would be well advised to check this list before observing. The Electronics Division engineer responsible for a system will attempt to minimize interference and warn the observers of possible problems.

It should be noted that only a few of these signals will be present at any one time.

MB/cjd

Attachment

Addressees:

| | | | |
|-------------|------------|--------------|-----------|
| J. Findlay | J. Coe | J. Payne | R. Viers |
| S. Weinreb | F. Crews | M. Roberts | R. Weimer |
| J. Dolan | J. Edrich | R. Rubin | W. Howard |
| G. Behrens | L. D. Gore | A. Shalloway | |
| H. Brown | R. Hallman | L. Snyder | |
| W. Brundage | L. Howell | D. Thacker | |
| D. Buhl | R. Mauzy | B. Turner | |
| J. Burford | G. Miley | G. Verschuur | |

| <u>Frequency (MHz)</u> | <u>Source</u> |
|------------------------|---|
| 120.000 .. (P) | Oscillator in 400-channel A/C receiver. |
| 151 ± 1 | Hydrogen maser (140'). |
| 181.217 | Phase locking oscillator in H receiver -- H/OH box. |
| 204.00 | LO -- Occultation receiver (140') |
| 240-300 .. (P) | Universal LO produces power in this frequency range - depends on program. |
| 286.00 | LO - Occultation receiver (140'). |
| 294.00 | LO - 234 MHz receiver (300'). |
| 375.00 | LO - Occultation receiver (140'). |
| 465.00 | LO - 405 MHz receiver (300'). |
| 810.00 | LO - 750 MHz receiver (300'). |
| 1270 ... * | LO - H line observations (300 or 140') - LO below. |
| 1272 ... * | LO - 11 cm (2695) receiver (140'). |
| 1347.4 ... (P) | 42' link. |
| 1347.5 ... (P) | Interferometer. |
| 1347.6 ... (P) | 42' link. |
| 1462 ... * | LO - OH (1612) observations (300' or 140') - LO below. |
| 1517 ... * | LO - OH (1667) observations (300' or 140') - LO below. |
| 1550.0 | LO - H continuum with 4 feed (300'). |
| 1570 ... * | { LO - H (1420) observations with 4 feed (300') - LO below. LO - OH (1720) observations with 4 feed (300') - LO below. |
| 1617 ... * | LO - 6 cm (5000) - 140' - LO below. (Observations made over range 4700-5100 MHz with LO above and below.) |
| 1758 ... * | LO - 3 cm (10,700) - 140' - LO below. (Observations will be made over 300 MHz range.) |
| 1762 ... * | LO - OH (1612) } LO above. |
| 1817 ... * | LO - OH (1667) } |
| 1870 ... * | LO - OH (1720) } |

* Moves around during normal line programs - check with observer for limits.

(P) On semi permanently.

| <u>Frequency (MHz)</u> | <u>Source</u> |
|------------------------|--|
| 2545 ± 10.. (P) | 42' link. |
| 2695.00 ... (P) | Interferometer. |
| 4850 ... * | LO - 6 cm receivers. |
| 5390.00 ... (P) | Interferometer. |
| 8085.00 ... (P) | Dual frequency interferometer (after June 1970). |
| 10,400 ... * | Pump - 1-2 GHz - tunable receiver. |
| 10,550 ... * | LO - 3 cm receiver. |
| 11,300 ... * | Pump - 2-4 GHz - tunable receiver. |
| 16,170 ... (P) | Dual frequency interferometer (after January 1970). |
| 20,000 * & (P) | LO - Water vapor receiver (85' - July 1969). |
| 20,600 ... * | Pump - AIL 6 cm receiver. |
| 20,815 ± 10 | { Pump - 300' 4-feed receiver. Pump - H-part of H/OH receiver (140' or 300'). |
| 21,600 | Pump - Cooled OH. |
| 22,000 ... * | Pump - OH part of H/OH receiver (140' or 300'). |
| 23,000 * & (P) | LO - Water vapor receiver (85' - July 1969). |
| 27,450 | Pump - 11 cm receiver. |
| 39,700 | Pump - TRG 6 cm receiver. |
| 40,000 | Pump - TRG 3 cm receiver. |

* Moves around during normal line programs - check with observer for limits.
(P) On semi permanently.