

16 July 1955
G.P.O., Hobart
Tasmania, Australia

F.C.C.
Washington, D.C., U.S.A.

Gentlemen:

Your public notice 18166 has found its way to me here. This memorandum shows an advanced kind of thinking which I heartily endorse.

Recently an astonishing brand of cosmic static has been found by C.S.I.R.O. to be coming from the planet Jupiter at frequencies near 20mc. My own observations here have carried the general background of milkyway radiations down to 2mc certainly and to 0.5mc probably.

I would like to suggest that small windows to observe these celestial radiations be reserved in the spectrum at intervals of about 1,2,5,10 in frequency from 100kc to 1000mc. The bandwidth need not be great, say 0.1%. Aside from the 1420mc region, no specific frequencies seem particularly desirable. However a wide variety of small clear windows are important to study the spectral distribution of various sources. Apparently, many modes of generating cosmic static exist depending upon the circumstances prevailing at the point of origin. Much fundamental information seems on the verge of being uncovered.

Enclosed are a couple of my recent reprints.

Very truly yours,

Grote Reber

RADIO-ASTRONOMY FREQUENCY REQUIREMENTS

From time to time the Commission has received information pertaining to the field of radio-astronomy. The science of radio-astronomy had its conception in the United States during the year 1932 when it was discovered that weak noise signals in a radio receiver were extra-terrestrial in origin and appeared to emanate from a point in outer space in the area of the Milky Way. Subsequent work in this as well as other countries has confirmed the original observations. It has now been determined that radio energy may be radiated by the sun, the moon and stars. In addition, such radiation has also been observed from interstellar gaseous areas. These radiations may occur over a very wide band of frequencies. It is pointed out that this phase of radio-astronomy involves only the reception of such energy and does not require the transmission of any signals by radio stations. In the relatively short time since its discovery, the science of radio-astronomy has contributed materially to our storehouse of knowledge pertaining to astronomy, stellar physics and radio propagation.

The matter of the protection of frequencies used for radio-astronomical measurements was one of the subjects studied by the International Radio Consultative Committee (CCIR) of the International Telecommunication Union (ITU) at their seventh plenary assembly meeting held at London in 1953. At this meeting, the Committee recommended that Administrations should afford all practicable protection from interference to radio-astronomical measurements, particularly on frequencies around 1420 Mc. In view of the widespread interest and work being done in this field both in this country and many others, the Commission considers it expedient to develop at this time additional information concerning these matters. Specifically, comments are solicited from interested parties as follows:

1. Name and address of the organization and title of the individual to be contacted in connection with radio-astronomy and related work.
2. The location or locations of radio-astronomical observatories and laboratories, both existing and planned.
3. A list of the frequencies or bands of frequencies presently under observation or proposed for observation.
4. A statement outlining the significance of radio-astronomy, particularly as it relates to the national interest.
5. With regard to observations on specific frequencies or in specific bands of frequencies:
 - (a). A list of those on which it is considered essential to make observations, such as the hydrogen line at 1420 Mc, giving bandwidth.
 - (b). A list of those on which it is considered desirable but not essential to make observations, giving bandwidth and reasons for choice.
 - (c). The schedule of observations on the above frequencies e.g. 24 hours per day throughout the year, summer daytime, winter nighttime, etc.

- (d). A statement of the extent to which radio interference can be tolerated. This information should be stated, preferably, in terms of the maximum electromagnetic field intensity of the interference that could be tolerated at each radio-astronomy site.
 - (e). A statement as to the feasibility of a schedule of part time daily observations.
6. Regarding locations of observatories and laboratories:
- (a). Are there preferred locations such as the southwestern United States?
 - (b). Are there practical considerations which might prevent the location of observatories and laboratories in regions remote from radio stations?
 - (c). Can the number of locations be limited so that if protection from harmful interference is required, a minimum number of radio communication systems would be affected. If so, what are these locations?

It has already been announced that equipment has been developed for radio-navigational use which depends for its functioning upon the reception of radio energy emitted by the sun. In view of the development of such equipment and the possible development of other similar equipment making use of electromagnetic radiation from the sun as well as other extra-terrestrial bodies, the Commission is soliciting the comments of interested parties in regard to the aforementioned questions. It is requested that such comments be filed with the Commission on or before July 1, 1955.

It is desired to emphasize that until and unless rule-making is undertaken and completed in this matter, there is no protection which can or will be given to radio-astronomy by the Commission. It is the purpose of this Public Notice to solicit information which can serve as the basis for determining whether a rule-making procedure should be instituted.

Adopted: April 19, 1955