

April 6th, 1954
General Delivery
Wailuku, Maui
Terr. of Hawaii

Mr. G. R. Ellis
Ionospheric Prediction Service
Box 801 H, G.P.O.
Hobart, Tasmania, Australia

Dear Mr. Ellis:

Many thanks for your very nice letter of March 28th. While I have discussed this subject with several people, you have provided the best analysis so far. The ability to change the elevation of the hole by adjusting the frequency is a very useful phenomenon. The size of the hole might be determined from absorption in quasi-longitudinal propagation. Mitra gives some theory about this on pages 202-205 of his "Upper Atmosphere". Unfortunately, I have not been able to evaluate his equations.

Your offer of the use of a field station is very kind. I am wondering if you can supply a bit more general information. The success or failure of cosmic static experiments is greatly determined by finding an electrically quiet location.

(a) Are there any Loran stations on Tasmania and if so how far away and at what frequency?

(b) Is your field station in a suburban area or in the country? About how far away are main roads and dwellings? Automobile ignition noise is not bad at medium frequencies, but motor driven home and farm appliances often are.

(c) What are the dimensions of your site; how is it oriented in respect to the compass; and how flat is it?

(d) If the tests are successful it may be desirable to expand the antenna system in one or more directions. Is there a possibility that adjacent land could be rented for a short term to put up a few poles? They would not interfere with the use of the land for farming.

(e) Perhaps you could contact the local power company or other suitable organization and secure an estimate as to the cost of erecting at your site 12 poles 50 or more feet high. Special poles are not necessary, merely the largest normally used.

(f) I hope to limit the things to be shipped to those I will use continually plus those needed occasionally but not available. Do you have a radio frequency bridge suitable for measuring the characteristics of antennas at frequencies from 0.5 to 2.5 megacycles?

(g) The things I bring into Australia will not be sold. Most will be returned here; a few given away. I would like to make some arrangement so that no duty will be imposed. Perhaps you can find out about this and advise me of what must be done.

(h) Topographic maps of Tasmania and the environs of Hobart will be greatly appreciated by me as I have never been there and nothing is available in the local library.

(i) Only median values of f_oF_2 for Hobart are published in the CHPL-F series and these appear quite tardily. I have written to Canberra about securing fotostats of the monthly tabulation sheets giving hourly values of f_oF_2 . So far, no reply has been received.

I am particularly interested in the months March thru August for the years 1950 thru 1953. What I want to find out is the magnitude and shape of the scatter about the median for different hours of the day and months of the year. Also I would like to learn about the frequency of occurrence of blanketing Sporadic E and strong spread F. These are usually noted on the above sheets. Perhaps you already have some analysis of these phenomena?

The earliest I can leave here will be October or November, so any experiments I conduct will have to be during the winter of 1955. If you are interested in this kind of thing, I would be delighted to have you make a setup either in Hobart or at the field station. The next few months will be as good as any for measuring the level of background noise at night. You may be able to find a sidereal component using relatively simple equipment especially when the criticals are low. Enclosed is a graph sheet with the hourly median F criticals plotted for 1952. This is the last data published in the CRPL-F series. At the bottom of the graph over the hours are marked the months and dates when the galactic equator is overhead at Hobart, at that time. If you can get some data which moves along in this manner, it certainly will be radiation of celestial origin.

I greatly appreciate your interest and expect to come to see you for observations during the winter of 1955.

Sincerely yours,

Grote Reber