

From: Theodore Holdahl

To: Doug Young

Date: March 15, 2006

Subject:

Request for Info - File #0111-EX-PL-2006

Message:

Reference number 4227

Question (a) A description of the nature of the research project being conducted.

This request is for a Part five experimental license to operate a transmitting station in the 2200 meter band, 135.700 to 137.800 kHz. The proposed operation of this station is to investigate the performance of small antennas and propagation variances. Presently there is enough interest in low frequency and operators of low frequency equipment to make the proposed tests more productive. This station will be operated in attended beacon mode. Also, two way communications will be attempted with other Part 5 licensee and foreign amateurs who are authorized to use the 2200 meter band.

Question (b) A showing that the communications facilities requested are necessary for the research project involved.

The bands of frequencies assigned in this experimental grant are available to radio amateurs in a number of countries around the world. Similar ERP values, narrowband signaling modes that take advantage of new DSP techniques to recover signals below the audible threshold, and low antenna efficiencies are used per the terms of their prospective licenses.

Propagation at frequencies of 60 kHz and below is well documented as well as frequencies in the MF broadcasting range. Much less information is available at 2200 meters. A number of factors affect propagation including time of day, seasonal affects, weather and in particular short, medium, and long term effects due to solar activity. Through the use of beacon transmissions monitored by existing receiving sites in the U.S. and around the world, and two way communication, significant data can be collected, analyzed, and the effects of propagation can be well documented.

Question (c) A showing that existing communications facilities are inadequate.

Part 15.217 of the FCC rules permit experimentation with a 1 watt transmitter input power and a 15 meter antenna. This will not allow propagation testing over sufficient distances. Due to the short antenna (15 meters max.) the electrical efficiency of a part 15 antenna is less than .1%. One watt into a 15 meter antenna yields an e.r.p. of less than 1 milliwatt. Greater signal strength is essential to permitting two-way communication and overcoming high ambient noise levels.

Justification for a five-year license term.

I want to observe propagation conditions as a function of the sunspot cycle. A two year