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* NEWSLETTER *
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TEXAS VHF-FM
S O C I E T Y

Vol. 1 No. 2 Nov. 1965

There was beginning to be doubt whether this issue was ever going to get off the ground, but here it finally is.

First, we would like to welcome the following new members:

WA5AKM Marvin Gruesen, 1711 Fortview Rd., Austin
W5YAX Neal Kronk, 5331 Westminister, Austin
WA5CBT Gene Barnes, 434 Windcrest, San Antonio
K5DYY Don Galloway, Rt. 2, Box 510, Alice
WA5NGC John Grivet, 7902 Cedel, Houston
W5PAR M. W. Chambliss, 7115 Richwood, Houston
W5DDJ Garth Johnson, 4918 Michael, Houston
K5ZGD Harry Sandberg, 2522 Waugh Dr., Houston
W5URN Dusty Rhoades, 2608 Oaks Dr., Pasadena
K5SDM John Gorlett, 7931 Glen View Dr., Houston
K5TUP Lucille Corlett, 7931 Glen View Dr., Houston
K5SUH Rus Shepherd, 419 S. First St., La Porte
W5VCE Leon Vice, 5939 Carousel, Houston
K5OZV Bob Levy, 4944 Woodway, Apt. 9, Houston
K5YSE Fred Kuhn, 7408 Stanwick Dr., Houston
K5ARG Chuck Horton, 2022 Prichard Lane, Dallas

WA5KTO's address is 6500 Banbury, Ft. Worth
W5FUA's address is 1616 W. Sixth St., Apt. 221, Austin
and we need everyone's zip code for future mailings in order to take advantage of bulk mailing rates. Area liason stations take note!

Now, into some of the business at hand, and later a blast at the technical side.

Purpose of the Society

Although no specific purpose was outlined in our meeting, it seems that some statement needs to be made to this effect, since one of the first questions usually asked about the Society is, "What is it for?". In general, the organization provides communication between the various groups scattered across the state, so that each knows, to some extent at least, what the others are doing. A secondary purpose is to provide a central clearing house for distribution of information concerning the availability of various equipment and parts. Third, it allows us to approach such matters as ARRL recognition and FCC approval in an organized manner, whenever this might be necessary.

If anyone feels that major purposes have been left out, or disagrees with those stated, we will be happy to publish other comments.

Symbol, Letterhead, Membership Cards

Little progress has been made here, I'm sorry to say; the only suitable symbol which I can think of is used this issue; if you like it, let me know, or if you think of a better one, send it in. Your ideas are earnestly solicited for a symbol; when one is decided upon, the letterhead and membership cards will be forthcoming.

Second Frequency

Does anyone have any objections to the use of 146.760 as a working (ragchew) frequency? This seems to be the one in use in other areas of the country, particularly for local base station use. 146.64 is suggested for eventual point-to-point use, where horizontal antennas might be used, or special modulation, etc. RTTY is on 146.700, by the way.

It would be very interesting if someone could make daily checks or propagation in his area and record them; however, I don't believe that there is anyone with the time to keep up with this. If anyone does, let me know what the band looked like last month. Several Texas stations have worked Florida on 146.94 during a recent opening; one of the local hams advises that 432 experienced a good opening at the same time. This points out the advantages of national frequencies; we should start considering one for 3/4 meters.

There appears to be an increase in interest of 440 MC mobile operation with considerable agitation for selection of a common frequency. This would be almost impossible to thrash out by mail; it would be very desirable for those who are ready to get on to wait until the February meeting, where we can go over the various problems in person.

At present, Dallas is using 449.1MC for base and mobile use, while here in San Antonio there are several control channel pairs in use in the high end of the band. It would be highly desirable to activate some frequency which provides for both direct and repeater operation; however, the standard 5MC commercial channel spacing for duplex pairs looks very tempting. This spacing allows use of one antenna on repeaters. The problem, of course, is that it is not possible to switch a 440MC transmitter between two channels 5MC apart, and this would be necessary if the same direct/repeater choice as is now used on two meters is to be retained. One suggestion which may turn out to be the most practical approach is to add a 4 or 5 transistor head end to the receiver for the other channel, leaving the transmit frequency the same. Specifically, for normal operation, the unit would transmit and receive on 449.1, and for repeater use, the receiver would be switched to 444.1 by disabling the existing front end, and activating the transistor convertor. This is just one of the suggestions; give this situation some thought and be prepared to discuss the problem(s) and select frequencies next meeting.

Speaking of the next meeting, it has been tentatively set for the first or second weekend in February. Keep these dates free if you can, and a definite time and location will be announced as soon as possible.

The one item that has delayed publication of this issue has been the technical portion. In order to get rolling again, the repeater information to follow has been lifted directly from the FM News which was published several years ago by Tom McKee K4ZAD and Seymour Paul K4FSU. They spent considerable time and effort on this information, and only after trying without success to improve upon it, has the full merit of this material become evident.

So with apologies to those of you who were on the FM News mailing list, here is a repeat of the first half of the repeater issue! The second part will appear next time.

Introduction

Terminology - Remote control means to control a base station from a distance. Two usual methods are by a wire line and by radio control.

"Repeater" is a general term for what the FCC calls a mobile relay. This is a station designed to receive a VHF frequency and simultaneously retransmit the message on another frequency.

You should think of remote control and repeaters as separate functions at all times. We will describe them separately in general and show how they are often combined for amateur use. See also Part "E" for definitions.

Remote Control - Now an amateur may use remote control to be able to place his base station on the top of a mountain with its obvious VHF advantages. He may decide to use the simplest method of remote control--wire line. This involves renting a pair of telephone lines from his home to the mountain top. In some localities this is an inexpensive solution and since it is a more positive method of control, is easier to install and meet FCC license requirements. If our ham gets his station built and licensed, he has the pleasure of extreme range and ultra reliable communication compared to his fellow hams. No big problems are presented and logging and identification are conventional.

But say our ham friend cannot get a phone line or that a line is too expensive. So he must resort to radio control with its initial expense of extra transmitters and receivers for his "control link". He must be careful because the FCC requires positive control and the use of frequencies 220 MC and above where obstructions often are a path problem. He must also consider that this radio remote controlled station is a small repeater in itself since he retransmits from his control or "up-link" and receives via a "down-link". Now he has run into problems involving logging and identification. He must log and I. D. not only when transmitting but whenever he is receiving since a

transmitter is on then also. This can be done manually or automatically. A complete understanding of FCC requirements as outlined further is recommended before any planning is undertaken. Various features not included in a normal station are necessary in a remote control station.

So a ham to locate a station in a high location must first consider controlling it. He can: 1. Live in a good location and control it "locally"; 2. use wire line remote control; or 3. use radio remote control. One of these is the first consideration in establishing extended VHF-FM communication in an area.

Repeating - The legal and technical aspects of a repeater are discussed later but there are other points to consider whenever a ham decides to "go repeat". What are your motives? The logical one would be to allow others, particularly mobiles, to use the advantages you have or can attain via remote control.

But what are the disadvantages involved? One of the most important is your personal time! For instance, how do you stay home and control the repeater all the time? What happens when you want to go to a movie one evening and at the same time someone wants to use "the repeater"? Someone may get disgruntled. How do the others feel when you get tired of logging them talking back and forth and decide to shut down.

When one person undertakes building and operating a repeater many of these and other problems arise. What are the best ways to solve them? We do not know. In some areas the unwritten law is to work direct and the only time the channel "B" transmit or repeater input frequency is used is in time of urgent need. Another way to help the present situation might be to have a repeater licensed and operated by a club and running shifts and operating during certain times of the day. (We don't know if this can be licensed.) Many have found that the most satisfactory solution is to limit the station to remote control operation.

As mentioned in the legal portion of this article, the F. C. C. is so undefined in the repeater area that the only real solution that will be effective is for the F. C. C. to determine and issue a clear set of repeater regulations for amateurs.

What are some other things to consider when contemplating repeaters? Maintenance can be a big problem if the station is located far away. (Imagine: 30 miles on a rough road, 6000 feet up, two feet of snow, across a creek, and you forgot your multimeter!) Another problem (there are more), if people have access to a repeater, this encourages 18 inch coat hanger basement antennas and other low performance operation. Limiting the use to mobiles helps some.

Frequencies - Frequency choices for repeater inputs and outputs should be made with future problems in mind. Disregarding the technical problems,

you must consider how your repeater will fit in with both local and national operation.

We haven't got the answers but we can point out a few of the problems. The first is what about the national frequency? If the activity in your area is and will be limited to a few, the simplest thing would be to repeat to or from the national frequency. However, this will normally become a problem and have to be changed, so the best way might be to repeat to another channel and monitor the national. For instance, in this system a mobile would need two frequency TX and RX. In channel "A" he does not repeat and works direct (TX and RX on 146.94 MC). In channel "B" he might TX on 146.34 MC and RX on 146.76 MC.

Other things to remember: on six meters remember the skip season, and on two meters an input above 147 MC will eliminate technicians and novices. Suggested repeater input frequencies are discussed in the technical considerations with the repeater design curves. They are: 2 meters - 146.34 MC
6 meters - 53.00 MC
now 52.84 as of 2/10/66

Repeater Definitions - Below are listed various terms that may be heard when discussing repeaters. Some of them are used only locally as far as we know, and we are not advocating their use. It was felt they should be defined as we used them while writing this article.

1. Repeater or mobile relay, see Part 1-A.
2. TX - transmit or transmitter.
3. RX - receive or receiver.
4. Control link - a radio frequency above 220 MC used to control a remote station.
5. Up link - a frequency, usually the same as the control link, used from the control point to the remote station to talk or transmit on.
6. Down link - a frequency usually different than 4 or 5 above which transmits a received signal from the remote station to the control point.
7. Direct - TX and RX on the same frequency. No repeater involved.
8. Channel "A" - an unspecified frequency. Usually the direct frequency.
9. Channel "B" - an unspecified frequency different than channel "A". Usually the repeater input frequency.
10. Carrier - the RF component of a transmitted signal upon which audio can be impressed.
11. C.O.R. - a carrier operated relay is a relay that closes and opens when the squelch opens and closes.
12. Drop out - the action of a transmitter shutting off or a signal level dropping below readability.
13. Desensitization - loss in receiver sensitivity caused by the presence of a high level RF signal on a frequency near the receiver channel frequency.

14. Dialed up - turning on a repeater when digital control is used.
15. Dialed down - the converse of the above.
16. Translator or RF repeater - a repeater in which the signal is never demodulated, but is always handled as RF. The project oscar repeater is an example of this type. We will not discuss translators in this article.

Please give thorough consideration to the proposed alternate frequency, as well as the alternate repeater output frequency mentioned, as these are likely to become major problems soon.

73 & CU Next Month

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