

# ZERO BEAT

HAMPDEN COUNTY RADIO ASSOCIATION, INC

W1-QSL BUREAU

SPRINGFIELD, MASS

ARRL AFFILIATED, 35th YEAR

## NEXT MEETING

### ANNUAL CHRISTMAS PARTY

The December meeting will be a joint Christmas Party hosted by the Hampden County Radio Assn, Mount Tom Amateur Repeater Assn., and the Provin Mountain Radio Club. An excellent band and fine food, complemented by door prizes, should prove to be fun for all. Festivities will be on Friday, December 10, 1982 at the Holyoke Elk's Lodge, 250 Whitney Ave., Holyoke, Mass. starting at 6:30 with cocktail hour to 7:30 followed by dinner and dancing till 1:00 AM. Tickets may be obtained from officers and board members of HCRA & MTARA. Tickets may also be obtained by mailing a check (payable to Ron Beauchemin) for \$11.00 per ticket and a sase to

Ron Beauchemin  
56 Acrebrook Drive  
Chicopee, Mass. 01020

No tickets will be sold after November 29 including mail orders.

October 28, 1982

## FLASH! FCC Gives 10 MHz to Hams NOW!

At 3 P.M. EDT today FCC released the major portion of the 10-MHz band for use by amateurs in its jurisdiction. Effective immediately, U.S. amateurs holding General, Advanced and Extra Class licenses may use up to 250 watts input and A1 and F1 emissions in the band segments 10.100-10.109 and 10.115-10.150 MHz. These emissions include CW and RTTY operation; voice modes are not permitted. The segment

10.109-10.115 MHz is not available at this time because of daily use by a priority government radio service. Amateur stations must avoid interfering with stations in the Fixed Service, because the band is allocated on a primary basis to the Fixed Service and these stations have priority. The amateur allocation is on a secondary non-interference basis.

TRX ARRL LETTER

# CHRISTMAS PARTY DIRECTIONS

① FROM SOUTH OF HOLYOKE

TAKE ROUTE 91 NORTH TO EXIT 15 (INGLESIDE)

② AT THE END OF THE EXIT TURN LEFT

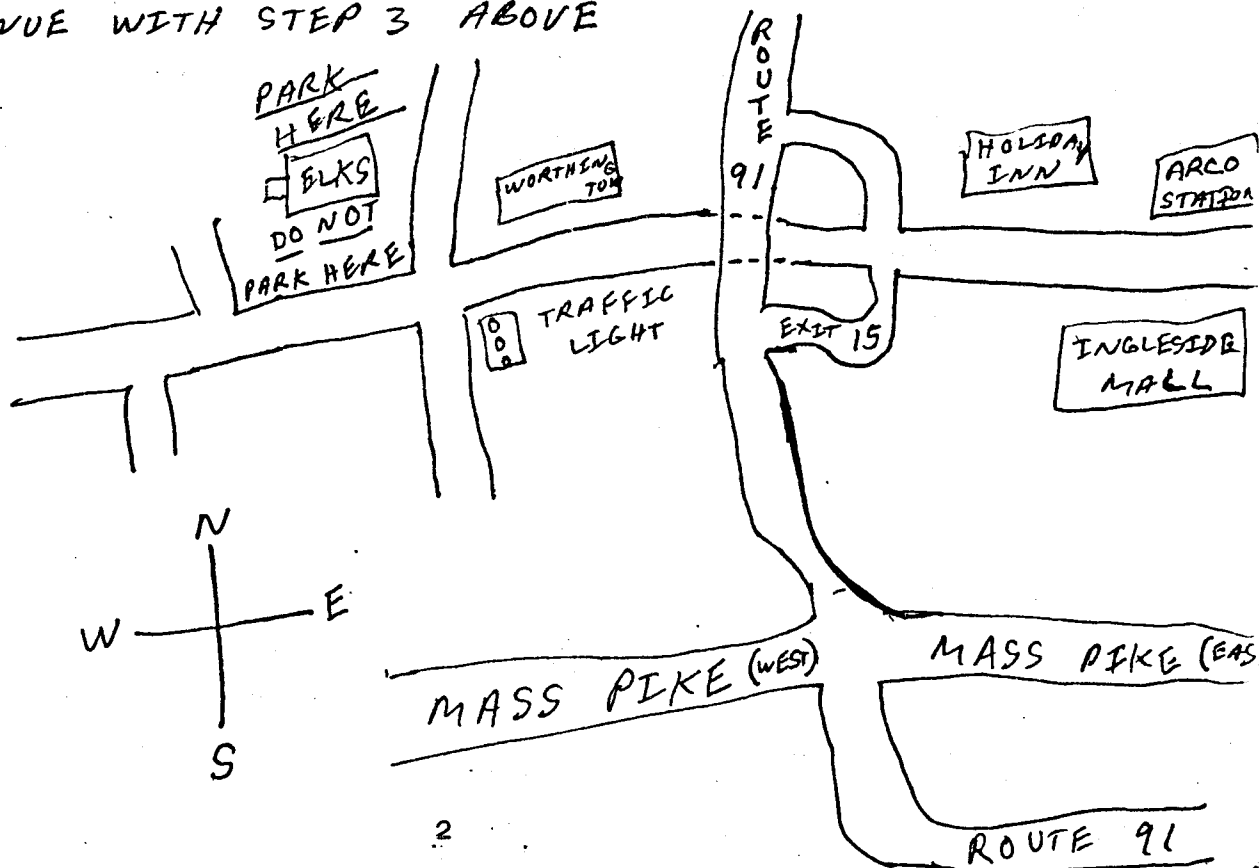
③ AT THE TRAFFIC LIGHT GO STRAIGHT FOR ABOUT 100-200 YARDS  
TURN RIGHT DROP PASSENGERS OFF UNDER CANOPY PROCEED  
STRAIGHT AHEAD TO PARKING AREA

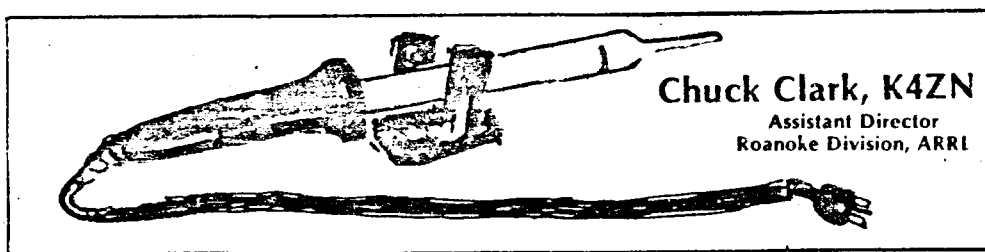
④ FROM EAST OR WEST OF HOLYOKE

TAKE MASS. PIKE TO EXIT 4  
CONTINUE WITH STEP 1 ABOVE

⑤ FROM NORTH OF HOLYOKE

TAKE ROUTE 91 SOUTH TO EXIT 15 (INGLESIDE)  
AT END OF THE EXIT TURN RIGHT  
CONTINUE WITH STEP 3 ABOVE





Chuck Clark, K4ZN

Assistant Director  
Roanoke Division, ARRL

### Transverters

Thanks to WARC-79, amateurs have three new bands in the HF range. Does that make our present gear obsolete? Not necessarily. Most of our amplifiers will work on the new bands without change. Type-accepted amplifiers that won't amplify 27 MHz will present the same problem on 24 MHz as they do on 28, and the same modifications should work for both bands.

Transceivers that cover only the older bands will present a problem, however. Some can be retuned or different crystals substituted. Some frequency synthesizers can be modified to make them generate frequencies in the new bands. But some rigs simply cannot be changed without a major engineering effort, or without impairing their capability on the older bands.

Fortunately, there is an alternative. Frequencies can be shifted up or down anywhere by heterodyne methods, making it possible to use a transceiver built for a given frequency on any frequency you wish. This can be useful not only for the new bands, but also for operating SSB or CW on VHF bands — for satellite work, for example, or to operate on MARS nets which are far removed from amateur bands. Converters can function

both on transmit and receive. As we generally transmit and receive on the same frequency, it is possible to make a converter that uses many of the same circuits to perform both the transmitting and receiving conversions — a device often called a *transverter*.

Transverters are somewhat more complex than linear amplifiers, but still well within the skills of most amateurs who do any home building. There are a few additional things to consider in designing a transverter that do not figure into a simple amplifier, however, and should be borne in mind.

An amplifier operates on one frequency, while a transverter uses at least three: the antenna frequency, the transceiver frequency, and the frequency of the local oscillator. There may be additional frequencies, as when harmonics of a crystal are used for the local oscillator. All these additional frequencies must be kept inside the box and not allowed to generate interference for anyone.

Frequency conversion, like frequency multiplication, is inherently a low-efficiency operation. And so it is best to do the transmitting conversion at a low-power level and follow the converter with

a straight amplifier to boost the signal up to the level required for effective communication. One problem is that most transceivers in use today put out a hefty signal even when operating barefoot, something in excess of 100 watts. Heterodyning a signal at such a level will mean a lot of power to be dissipated, and also a lot of spurious energy to be kept from getting out and causing trouble.

Heterodyning generates not only sum and difference signals, but also harmonics of both signals being mixed and sum and difference signals generated by mixing the harmonics. At low-power levels, such spurious outputs ("spurs") may be negligible. At high power they are not.

Three solutions are possible: 1) Work at full power and depend on filtering and shielding to keep the spurs bottled up. 2) Insert a pad in the line from the transceiver to reduce the output to something that can be converted effectively. 3) Turn down the gain control or reduce the output of the transceiver in some other way to the level desired. The third solution is the simplest, but it may cause problems with some transceivers that weren't designed to operate at low-power levels.

— TNX WORLD RADIO —

The next four pages contains a very interesting article reprinted with permission from Milton Lowens, N4ML, of the International Fox-Tango Club, PO Box 15944, W. Palm Beach, Fla. 33406. Its subject is the new Yaesu FT-One, a radio which has just about every feature imagineable built.<sup>in</sup>You may wonder why we cover a radio which costs as much as the venerable family auto. I'm sure everybody has at one time dreamed about the ultimate rig and wondered what it would be like. Here is an opportunity to see such a rig dissected and analyzed in detail. The article is presented in two parts with the second half to appear in Jan. 1983 ZB. (P.S. don't forget to renew your HCRA membership....don't want to miss out on the second part of this article)

## YAESU'S FT-ONE---"A BOLD STEP BEYOND"

The following is a review of the FT-ONE reprinted, with permission, from ARF (Amateur Radio Profiles), a quarterly magazine devoted exclusively to comparative evaluations of amateur radio equipment. For more information, write Box 164, Cataula, GA 31804.

The waters of controversy and expectation were stirred to their maximum among the amateur ranks when Yaesu Musen announced the coming of the FT-ONE general coverage all-mode solid state transceiver exhibiting the ultimate in receiver performance and versatility as dictated and predicated upon by current technology. Many ardent amateurs and Yaesu fans waited earnestly for the arrival of the first FT-ONE units...But due to minor technical problems, initial deliveries were postponed for quite a period of time until corrections could be made. Now, let me emphasize that the problems arrived in initial FT-One manufacturing were of a minor nature. We have to, in all fairness, give credit to Yaesu for attempting to put their best foot forward by eliminating all problem areas and insuring the fact that when the FT-ONE would finally go into the field, they would be "Letter A Perfect". Minor problems cropped up in a regular design. A potential failure problem in isolated integrated circuits could have led to a potential problem. The probability factor that the units would have performed was excellent, but Yaesu did not want to even let the slightest hint of potential problems slide by in the FT-One design. They wanted the best - they advertised it as the best and this is what would be delivered to the customer. The Best!!

As advertised, each unit is unpacked and run through an extensive re-check in Yaesu's own quality control laboratory in Paramount, CA. It was at this time that some of the initial problems were discovered. Many problems were remedied on the spot but some of the initial production was, as we understand it, returned back to Tokyo for correction.

Very possibly, the initial problems could have caused concern among the amateur ranks due to the high cost of the FT-ONE but then again, one has to realize that problems of this type are encountered with any new manufacturing process, whether it be a home appliance, an automobile, a television set, or what have you. It's just the fact that we amateurs are so close in touch with the manufacturers that word of minor problems tends to get out, alarming some and sometimes the nature of the problem gets totally out of perspective. But, let me assure you that the product, as being shipped today, is nothing but "class".

### GENERAL IMPRESSIONS

Expecting a transceiver of normal physical proportions, the FT-ONE is a very large/heavy unit. It reminds me of the Collins KWM-380 in size and weight. It measures 14 3/4 inches wide, 6 3/4 inches high, and 16 3/8 inches deep. Those figures include the knob projection, total depth including the heat sink, etc. The unit weighs 45 pounds but its boxed shipping weight is over 60 pounds so do not expect your FT-ONE to arrive via the United Parcel Service, rather it will have to

come truck freight because of its size. [The packing of my FT-ONE must have been lighter---I had no problem shipping it to Paramount via UFS and Yaesu returned it the same way. N4MLJ] Just a minor note of interest. The typical carrying strap that is on most of the large Yaesu transceiver products is included in the FT-ONE with one minor alteration. The strap is recessed into the left side of the cabinet along with its mounting harness so that there are no protrusions on the left side of the transceiver as there are in other Yaesu transceiver products. [However it does complicate removal of the top cover to some extent. N4MLJ]

Following the aesthetic design that has been most popular with Yaesu, the gray finish has been continued, the knobs are plastic with brushed aluminum inserts, and all switches and pushbuttons are also brushed aluminum. The entire chassis is steel, including the front cover plate which obviously accounts for the majority of the unit's high weight factor.

Initial impressions when unpacking the unit can only leave one astonished and awed with the unit's design impressiveness. There are 46 controls on the front panel of the FT-ONE of which seven are dual or concentric controls. Two very generously sized meters are in the upper lefthand corner of the unit, along with a dual digital display with the first being the frequency readout, utilizing yellow LEDs with accuracy to 100 hertz. To the right is the second LED display featuring 1/4" LEDs indicating the amount of kilohertz of clarifier shift whether it be plus or minus and the last being the VFO channel indicator which is an absolute must as we'll find later on in the article, since the FT-ONE possesses a total of twenty (20) VFOs.

While we're talking about the VFO and the digital display, let's clarify a point right now. The tuning rate of the FT-ONE is as follows: One megahertz, 100 kilohertz, 100 hertz, and 10 hertz. The tuning range of the clarifier is plus or minus 9.9 kilohertz. The clarifier not only works on receive but in the transmit mode also. In attempting to move frequency, it is obviously controlled by the front panel VFO, but the tuning rates are controlled by pushbuttons. I'm sure, at this point, we're all familiar with the system on Icom's IC-730 wherein the tuning rate switches are stacked together vertically on the righthand side of the VFO. With Collins' KWM-380, the tuning rate switches or pushbuttons are lined up horizontally above the VFO. Yaesu, in its FT-ONE design, slipped upon their layout of the tuning rate pushbuttons. In order to change megahertz, the operator has to push the megahertz button located directly below and slightly to the left of the VFO simultaneously while holding the button engaged and then he has to turn the VFO tuning knob to the correct megahertz figure. You may then utilize the VFO to obtain your correct kilohertz or hertz frequency. However if you wish to move faster than the VFO tuning rate, you have the option of using an up/down pushbutton system located all the way over on the righthand side of transceiver mixed in the the VFO memory selection pushbuttons. Then the 10 hertz tuning rate is activated by an additional pushbutton located below the VFO and to the left. This, in our estimation, is an awful lot of jumping around just to change frequency. It would have been much nicer and

more convenient if Yaesu would've located the frequency change/shift buttons all in one area, possibly underneath the VFO itself and, instead of the clarifier buttons being located in this area, they could have moved the 100 kilohertz buttons to this position. That would have given us alignment of megahertz-100 kilohertz steps, up or down, with the third button being utilized for the 100 hertz or 10 hertz tuning rate, all located adjacent to each other in one horizontal line of pushbuttons, rather than the way it's set up now where one has to continuously switch hands from one position to another in order to obtain the proper frequency readout.

The FT-ONE's meter monitoring system is excellent. As mentioned above, two meters are employed. Both meters are back lit in a lime-greenish color which is very pleasing and easy on the eyes. The first meter is primarily set up for transmitter function monitoring. Selectable from a control switch just to the left of the meter are the following functions for meter number one: IC, which indicates the amount of current at the final transistors during transmit; VCC which shows the DC source voltage of the transceiver both during receive and transmit [if you think about this, it's a handy little device for voltage monitoring on an external 12 volt power supply.] The next function is DISC which acts as a discriminator indicator in the FM mode. COMP monitors the compression level in db of the processor and, last, to monitor reflective SWR...The second meter in receive functions as an S meter calibrated from 0 to 60 plus decibels and in the transmit mode, it monitors ALC function.

#### VFO MEMORY SYSTEM

Without a doubt, Yaesu's FT-ONE possesses the most versatile and expansive VFO/memory system yet introduced in the amateur and commercial market...In order to understand the complex VFO system, we first need to explain the controls and control functions. As mentioned above, there are two VFO's labeled A and B. Selection of the VFOs is made with a control on the extreme right side of the VFO panel. Also on this switch, the operator is given the flexibility of receiving on and transmitting on B, receiving on B and transmitting on A, and keyboard entry...Two additional selector switches are provided, one for each VFO. The switches are labeled 0 through 9, indicating the VFO channel of operation. In other words, A has 10 channels of memory, VFO B has 10 channels of memory. Memory entry into the VFO channels can be done manually on A and B and can be done electronically on A only...Manual frequency entry into the A and B VFO channel selector switch is accomplished very easily. Simply select the VFO you wish to program on the VFO selector switch, select the channel in which you wish to program the frequency, then bring up the frequency utilizing the main VFO tuning knob and the megahertz and kilohertz entry pushbuttons, and your frequency will be held/memorized in the VFO channel you have selected...If you had all 20 VFO channels programmed, you could check the activity on each one by merely selecting the correct VFO and then twisting the VFO channel knob through the 10 positions... The FT-ONE's memory system does not lock the frequency; you have the option of utilizing the VFO to move or shift frequency regardless of which VFO channel you are using...If you think this is the ultimate, then we should warn you that we haven't finished yet. As mentioned above, on

the VFO selector switch, there is a position called KEYBOARD. Frequency can be entered into VFO A only via a keyboard located underneath three VFO selector switches. It's very easy to operate. All one has to do is have the selector switch in the keyboard position; on the keypad, punch the number of the channel you would like to program, then hit the memory button which automatically brings up the previously memorized frequency and also in the channel number indicator window, the red LED indicates the channel now being utilized...The next step would be to punch in the keypad the megahertz you wish to program, then via the VFO or the 100 kilohertz tuning button, finish your frequency selection, then hit the dial button which then automatically programs your selected frequency electronically into your previously selected VFO channel. All 10 channels in VFO A can be done utilizing this procedure...A memory recall system is provided in the FT-ONE for VFO A only and all it involves is having this selector switch in the keyboard position on the keypad, hit the VFO channel you would like to analyze, then hit the memory switch and the frequency on that selected channel will appear on the digital readout.

Although it is extremely difficult to explain, the system is really a lot easier to use than one would think, but the possibilities of such a system are limitless. For the contestor, no explanation is really needed as a multitude of frequencies can be continuously analyzed for activity, etc. For the operator who has those certain frequencies that he uses on a continual basis, they can be programmed into the system. For the operator involved in various nets and schedules, the FT-ONE would be his dream as QSY is instantaneous, along with instant cross band movement and remember, the FT-ONE is fully solid state - no tuning involved, so once you hit the switch, you're ready to transmit.

In analyzing and using the FT-ONE's dual VFO 20 memory system, we found no great fault with it, other than it was a sheer delight to use. However, we would have liked to have seen Yaesu include the ability to scan the 10 channels of memory in VFO A. No provision is made in the unit for previously programmed frequency scanning although there is a scanner system built into the FT-ONE that, when activated, will scan the entire frequency coverage range of the receiver hunting for a signal that will deactivate the scanner operation. Sensitivity or the threshold of the scanner system is set by a control known as the RF attenuator which we will explain later...The purpose of such a scanning system as this is questionable although we found it rather useful the other evening when the 10 meter band was just about shut down for the evening. We were able to activate the scanner and let it search the entire 10 meter band looking for activity!! Oh yes, for whatever importance it is, the scanner operation can also be conducted through the 9.9 kilohertz of the clarifier operation range. I see no reason why this would ever be used but it's in the FT-ONE!!!

#### TRANSMITTER

The transmitter section of the FT-ONE is very similar in design to that of the FT-107 but with marked improvement and modification. The heat sink on the FT-ONE is massive - as large as the unit on the Collins KWM-380; however, unlike the Collins, the fan is included as a

standard feature. Careful design went into the system of moving the air through the PA cage via a tune ducted airflow system.

The transmitter is totally solid state and broadbanded. Cross band operation was no problem for the FT-ONE. As a matter of fact, on the mode switch, you are able to receive in one sideband and transmit in the opposite sideband...

Of course, with the heat generated by the PAs, careful consideration has to be given to VFO stability and from a cold start, running the rig continuously for one full hour, VFO drift was less than 100 hertz.

Power output on 10 meters was 96 watts with an average of 115 watts on all other bands. The transmitter is fully VSWR protected. We found no shutdown up to the 1.8 point. At 1.85, the output power dropped from 100 to 90 watts. On the 14 meter band at 2.0, from 100 to 75 watts and at 2.2 SWR, the total power output fell 15 watts. In the meter function of the FT-ONE, there is a provision for monitoring SWR, however, the meter carries no numerical indication of what VSWR is indicated. However, we found the manual to explain that the highest point of the line on the meter's reflected scale would be a 2.0 SWR. This was verified and found that at this indicated point, the actual VSWR was 2.25. Of course, as we well know broadband, solid state transmitters do not like VSWR of any type. The monitoring of the standing wave ratio can be very important especially right at the transmitter. Some funny things can happen between one's transmitter and amplifier, thus it's one of those FT-One niceties to have a VSWR bridge included in the transceiver for monitoring purposes as is the trend in many cases today when utilizing solid state transmitters. More and more amateurs are utilizing in line tuners to zero beat any existent VSWR to the point where it is completely nulled in order to obtain the maximum efficiency from their transmitter sections.

The microphone for the FT-ONE is an optional item and of course, Yaesu offers many different systems here; however, if one wishes to utilize the scanning operations of the FT-ONE with remote pushbuttons, then the mike will have to be purchased from Yaesu. We utilized Yaesu's YM-35 in our testing sequence but got the best audio reports on Shure's 444D microphone. Of course, the "ONE" possesses a processor which did a very admirable job during a recent DX contest. Reports with and without the processor were usually 1 to 2 S units when the incoming signal from the DX station was below an S-5 on the signal strength scale.

Always impressed with R. L. Drake's TA-7 transmitter protection system, we were very interested to see if Yaesu, with the FT-ONE, had built enough protection into the "ONE" in case of heat or overdrive situations. This was checked out by introducing enough VSWR into the system via an inline tuner coupled into a dummy load to bring the power down to the 50% level or about 50 watts out. We then overdrove the input so that the excessive current would drive the PAs into saturation. You guessed it. The FT-ONE immediately shut

itself down and, with no muss or fuss with a flick of the switch, the "ONE" was on the air again!! Our next test was to disengage the fan to see if the PA cage heat sensing protection system would be activated utilizing a thermal couple; the cage, upon continuous CW keydown, built up to 127 degrees when it shut down.

So, Yaesu has put enough thought about necessary VSWR current and heat sensing protection into the "ONE" so that we operators who sometimes get careless or those operators who like to drive the pants off their rigs can obtain maximum efficiency without hurting the most vital of components in the FT-ONE.

Another outstanding feature of the FT-ONE is a control called the AMGC which is an automatic mike gain control. When activated it inserts a microphone gain constant and looks for a specific intensity of signal before the microphone circuit is open. What it really does is cut down objectionable room noises from getting into the transceiver such as linear fan noise, people talking in the background, etc. It works quite well and is quite effective and does not interfere with the VOX operation. Coupled with the AMGC is another interesting control previously known to us only in some of the Kenwood products, called a MONI switch. [Both the AMGC and MONI features have been standard on the FT-901/2 etc. for a long time. N4ML] (The MONI feature) enables you to monitor your own audio as it is being transmitted. It is ideal for analyzing the performance of microphone for setting speech levels or mike gain control and for analyzing the efficiency of the internal or any external speech processor you may wish to attach to the FT-ONE. It also will show you the efficiency of the AMGC circuit and is a welcome addition to Yaesu's product line. We certainly hope they'll include this in all their future offerings as 90% of the Kenwood owners will tell you, it's a very valuable feature to have on a transceiver. [It also permits tape recording of both halves of a QST but monitors audio only, not the actual TX signal. N4ML]

As advertised, the FT-ONE is also an FM and an AM rig. We did not have the FM board. However, on the AM side, we were able to develop a rated output of 28 watts.. (Don't know why AM has been included, but who am I to say?!!)

CW-wise, the rig performed flawlessly. The FT-ONE is equipped with CW full break-in for QSK or semi break-in. A Curtis keyer is offered as an option and, uniquely enough, the rig will accept two keys for operation on the CW side of the spectrum. Clean as a whistle - No objectionable key clicks or chirps could be detected at full output. Full QSK worked absolutely beautifully even with the keyer set up on the 30 word per minute range.

#### RECEIVER

I think we saved the best until last because the Yaesu FT-One is probably the most outstanding receiver we have ever had on hands on here at ARP. What the unit can do is really breathtaking and shocking. We'll outline them on a paragraph by paragraph

basis. First of all, AGC is selectable in three constants: fast, slow and off. The slow position, which would be used in sideband, does not hang like the majority of receivers that we're used to. It has a good, smooth drop off, not too fast and not too slow. Obviously, Yaesu has come up with the best constant for drop off time in the SSB mode. I personally know many operators who run SSB in the fast constant just to get the quick drop off but the FT-ONE's slow position worked remarkably well.

The FT-ONE employs two RF attenuators. The first is the common garden variety vanilla type attenuator we're all used to, but the second one needs a bit of explanation. Known as a pin diode attenuator, the unit allows one to reduce a strong signal without sacrificing or decaying the sensitivity of the receiver section and what all this means is this: While testing the FT-ONE, we found a signal that was registering S-9 plus 10, but underneath this QSO there was also another conversation being conducted at approximately the S-8 level. By utilizing the pin diode attenuator, we were able to attenuate the high level signal and let the lower level QSO come on through to the point that, by utilizing the IF shift and band pass control of the receiver section, we were able to clear the low level signal to the point of excellent intelligibility and wipe out that interfering S-9 plus QSO signal !!!

WOW!!! No other receiver I've ever seen in my day has such an item. Its operating efficiency is utterly fantastic.

The IF shift and band pass width controls of the FT-ONE are literally the most versatile and provide what we consider the ultimate in operator control. Following an idea that was used on the "Signal One" system, it permits the pass band to be established by the width control and varied with the IF shift concentrically, as both controls are mounted together on this same shaft with a friction coupling device...the mechanical design of the control knob is such that the top of the knob skirt has a window which equates to the full width of the entire band pass of 2.4kHz. As you narrow the width control, the window mechanically closes, giving you an optical view of exactly how tight your band pass is becoming. Once you have obtained the band pass needed, then you are able to adjust the IF shift for even more optimum control. For example, under practical operating conditions with the band width in its full open position at 2.4kHz, we were conducting a QSO on the FT-ONE. Alongside of us, 1.2kHz away, another QSO started. The signal strength of the adjacent QSO was so strong that splatter was covering our QSO up to the point of unintelligibility. Our first step was to take the band pass window and close it down to the point where we had greatly attenuated the interfering signal. We then optimized the IF shift for best audio, then adjust the pin diode HF attenuator for the most pleasant signal. The results? We totally eliminated the interfering QSO!!! This was not done once but time and time again. It worked outstandingly. On the bench was an R-7 receiver and a TS830 and no matter how much manipulating you wanted to do, they could not equal the efficiency and the quality of the signal coming through on the FT-ONE. On CW, it totally eliminated interfering QSOs and I guarantee you that they were heavy, 6 and 700 Hz away from the center of our operating

frequency...AMAZING!!!...In the recent ARRL DX contest, although time did not allow us to get in there and fight the Battle of Battles, we did follow a couple of our friends around the band and utilizing the facilities of the FT-ONE, were copying returns from DX stations that they were not able to answer even though they were using fully loaded IC730s, etc...It's also important to know that this time, in the SSB position, the FT-ONE had a total of 14 poles of crystal filtering. With the insertion of one of the CW filters, a total of 22 poles of filtering can be inserted which simply provides the most outstanding selectivity any could ever want. The design of the FT-ONE leads to minimum filter leakage. Yaesu has given thought to the filter insertion loss so that equalizing amplifiers are strategically placed so that signal level selectivity and intensity remain at optimum level.

Yaesu's FT-ONE and at this point I really wonder why they called it the "FT-ONE" - I guess it's because it is "Number One", but anyway, utilizing "Hayward's" measuring techniques, the testing variables were shockingly good, although we weren't surprised. After using the receiver for quite a number of days, receiver sensitivity measured at 20 db SN/N was a phenomenal 0.19, almost to the point where it's totally unmeasurable. Noise floor was 144dbm, and blocking above noise floor was 147db. IMD was 94 db...Literally the most outstanding specifications we've ever seen on any receiver whatsoever...As mentioned above, when we were talking about the scanner operation when the band was going out on the 10 meters and we came across a signal, we immediately tuned the 830 and the R-7 receiver from Drake to see what the comparison would be like. Although the signal on the FT-ONE was extremely low level, it was still an intelligible copy. For simplicity reasons, signals that were averaging from S-1 to S-3 could not even be heard on the 830 and on the R-7 were barely breaking through the noise threshold...The signals that were way down in the inherent noise level of the 830, although barely copyable were running to 5, 6, and 7 on the FT-ONE and with a 1 or 2 on the R-7. Now obviously we're not implying that 5 meters really mean all that much as we all know they're basically relative; however, the point we're trying to show is that the sensitivity/selectivity of the FT-ONE is vastly superior to the two side-by-side tested rigs.

The noise blanker, with its adjustable threshold worked very well. As has been past experience with other receivers, once the noise blanker was activated, the dynamic range of the receiver was literally destroyed. However, even in the full, wide-open level of the blanker in the FT-ONE, the dynamic range only fell off a few db. What was most impressive about the noise blanker was the extreme latitude of control it had over noises of the power line type, etc. On the 830, in order to wipe out some adjacent line noise interference, it took full insertion of the variable control which hurt the unit's dynamic range, but on the other hand, we barely tweaked the control of the FT-ONE to totally eliminate the interference and, as time during our test progressed, the strength of the interfering signal got to the point where the 830 couldn't handle it, but a slight increase on the noise blanker control of the "ONE" brought it down the the non-existent level...Rather amazing, indeed!!

To be continued -

ZERO BEAT

TIDBITS

Lucian "Duke" Dugas became a Silent Key October 25th. Duke was a quiet worker behind the scenes at the club and is much missed. Our condolences to his family... The HCRA Field Day score under 5A on page 93, November OST, was 3076 points!...KALDIP passed general, FB Russ!...The Section Emergency Test (SET) was the best ever-more people, more situations, more traffic! A well done to all who helped, especially WB1HIH... MTARA info net is on 146.34/.94 Wednesday nights at 7:30. Check in... KALAPR built a six meter beam according to the NBS data and one according to WLHDQ's design. Fred feels that the Ed Tilton design is much better!...WLKK is putting up a big quad to test against his immense rhombic. Let us know what you discover, ART!... KALCDV passed advanced, FB, Larry...Provin Mtn Club sponsors a Hoss Trader's Net Thursday evenings at 8 pm on the .10/.70 machine. Check in with items to sell or trade...WALCTQ and WB1EQS trying to help NOBARC keep its tower for the .31 machine... WALZKT learning computer languages to keep himself current with accounting techniques...WB1ETS bought one of those new Yaesu FT-102's...With the opening of most of the 10mhz band, quite a few HCRA members are getting their hand in...WALYCA is recovering from a knee operation, Tryon is also the new radio officer in Southwick...Commercial radiotelegraph licensees can now get the code credit for amateur exams...WL1ALL featured in local newspaper for his interests in town projects, honey bees, and amateur radio... N1AHW and N1ACV bought VIC computers to use for RFTY...

ZERO BEAT WANTS TO  
HEAR FROM YOU!!!



An Inexpensive 200w 51 ohm Dummy Load

- Parts list:
- 1 1qt new paint can
  - 1 S0239 chassis connector
  - 10 510 ohm 2watt carbon resistors 5%
  - 2 3"sq pieces of copper clad pc board
  - 1 18" piece of #solid copper wire (remove sleeving)
  - 1 qt of Squib Mineral Oil

under \$10.00 total

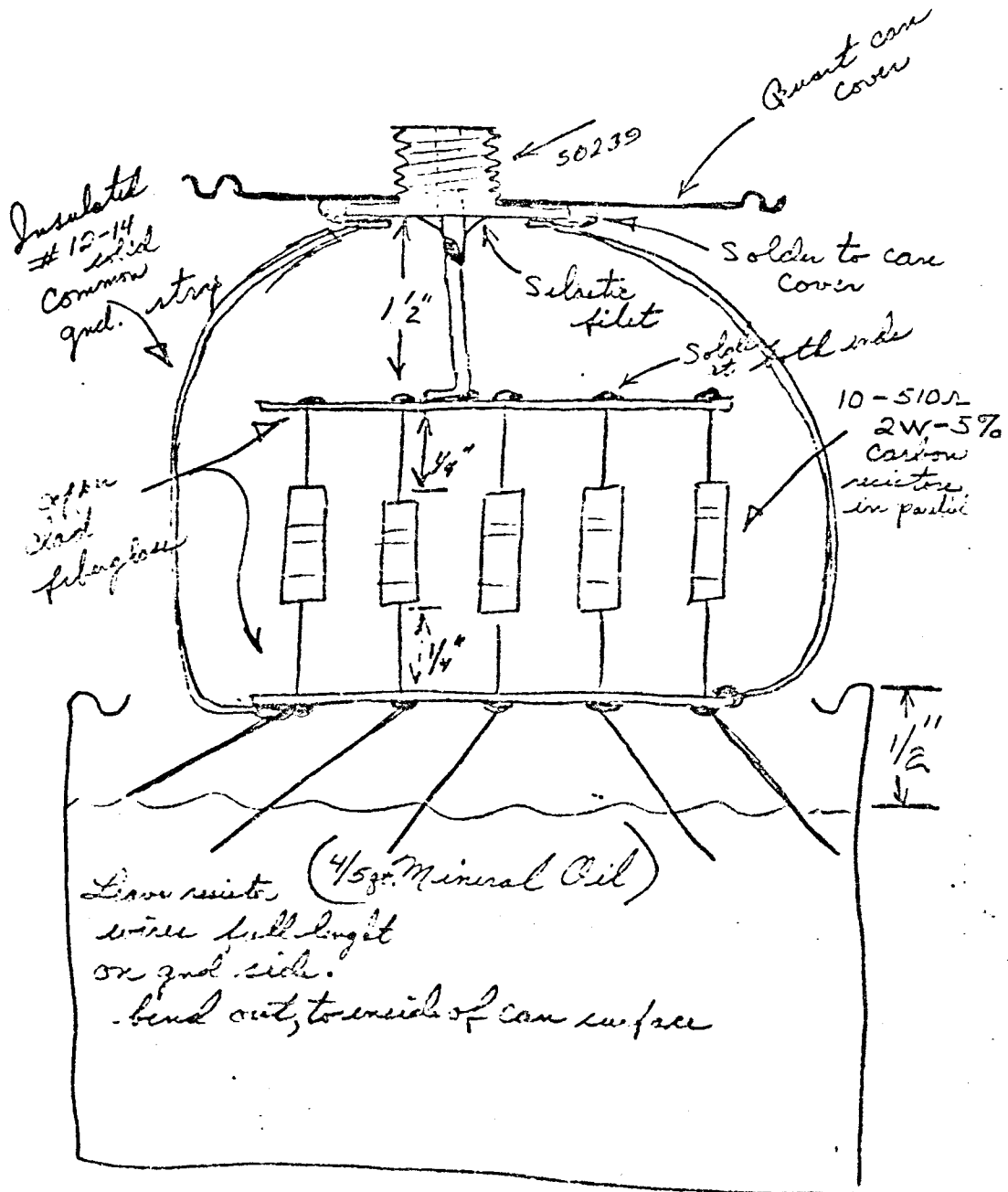
- Construction:
- 1) Cut a 5/8" hole in center of can cover for connector
  - 2) Cut corners approx. 1" off of pc boards so as to fit down in can
  - 3) Drill 10, 1/16" holes evenly spaced around boards approx. 1/4" in from the outer edge. Keep 2 boards to gether while drilling
  - 4) Solder resistors, sandwich style with at least 1/4" leads at each end
  - 5) Cut top plate leads flush to pc board, have lower leads long so as to touch inner side of can
  - 6) Solder connector on inside of can cover and solder center conductor to top plate using 1-1/2" of #12 wire



- 7) Solder wires to cover connector and bend to clear top plate. Solder other end to lower plate.
- 8) After insuring everything will fit, add oil to no more than 1/2" from top insuring top plate will be covered after assy.

This will help to keep the airwaves clean

KA1JDY  
R. Achhambault



200 watt dummy load

SELL: F9FT 16 element 2 meter beam \$50.00 Ron, WB1ETS 413-593-9852

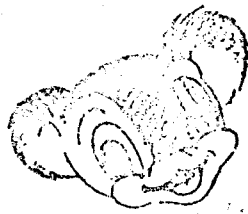
Informal Net

Tis the season to come in out of the cold and spend a little time in front of the radio. The HCRA will once again start up an informal net on Thursday evenings at 9:00 pm on 28.650 mhz. All are welcome to partake and join the qso. We welcome any info and your company.

CALL BOOKS

The HCRA is making US and DX callbooks available at substantial savings. We are selling them for \$18.00 and \$17.00 for the US and DX versions respectively (normally available at \$19.95 and \$18.95). Order soon as they will be sold on a first come-first serve basis. Send check payable to HCRA to:

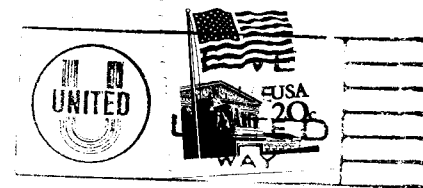
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*"Quick As A Wink" Printing & Sales Co.*  
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Dec. 1982 Zero Beat



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