RTTY

NEWS OF AMATEUR RTTY

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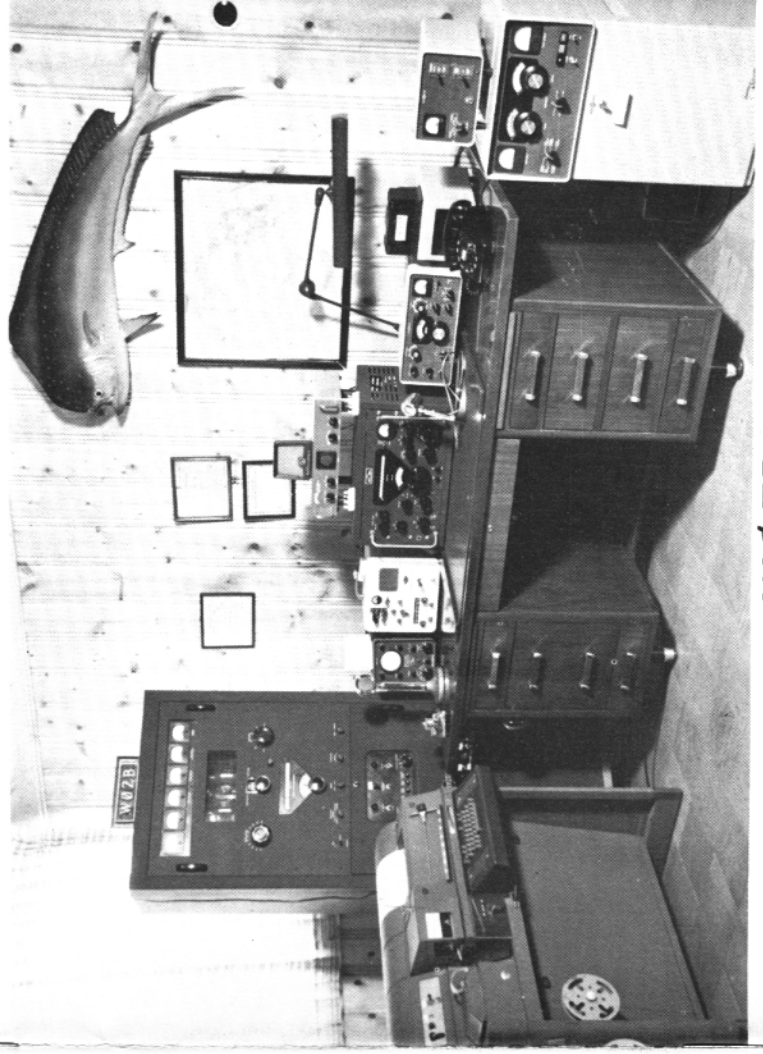

WØZB

LES BENSON • ST. LOUIS, MO.

HORSE TRADES

This page of the Bulletin is for use of amateurs who have RTTY EQUIPMENT FOR SALE OR TRADE and those looking for equipment to buy or trade. It is a free service and may be the means of getting someone on the air.

FOR SALE: 88 mhy toroids $1.00 ea., or 5 for $4.00 ppd. Precision Tuned to specified freq., $2.00 each or 5 for $9.00, ppd. W6CQK
1307 Alameda, Redwood City, Calif.

FOR TRADE: ART-13, ARC-5 xmtr and recvr, Conn organ amps rated at 15 watts, 10 meter converter, DX20, Heath XC-6 conv. Intl Xtal FCV-1 six meter conv. Stan Roher, K9IXS, Elkhart High School, ARC, Elkhart, Ind.

WANTED: Volumes 1, 2 and 3 RTTY (1953, 4, & 5) . . W2KDW

TRADE: AN/URA6, Group. (2 freq shift conv. CV-57/URR & 1 comparator CM-14 URR) New with cables and inst book. Consider 2 or 6 meter Communicator, Tape recorder etc. Make offer W3ZYK
P.O. Box 66, Mechanicsburg, Pa.

WANTED: URA/8A or single CV89 in good condx . . K9CNG

FOR SALE: 455 polar relays, excint 2.50 each. Teletype chadless tape splicers, new 2.50 each.
255 sockets 50¢ K9CNG

FOR SALE: Hallicrafters SX-88 Ser. #184 $250 FOB W9HHP

FOR SALE: Model 14 TD with sync motor, $125.00 . . . W2JAV

WANTED: Model 26 or 15 with keyboard K5DNH
102 Bahon, New Iberia, La.

FOR SALE: Model 26 with cover, table, AUTOMATE, mint condx $90.00 . . . . . K9MDM
4839 N. Christiana Ave., Chicago 25, Ill.

WANTED: Reperf, typing or non typing. Will consider any condx. K5MBB
4525 Robinwood Dr., Waco, Texas

WANTED: Perf or reperf and 14 TD. Also manual for 15 . . . . . K2TKH
RFD1, Gillette, N. J.

FOR SALE: 20 model 28 keyboards W2ZKV

FOR SALE: Very reasonable, FRR-3-A Diversity bay, and Westrex 50 type converter, write for details . . KL7AUV
Box 1048, Star RtA, Spenard, Alaska

GOOD BUY: Phoenix SW Division ARRL Convention, May 27 . . . . . RTTY

RTTY, Inc.
372 WEST WARREN WAY
Arcadia, California
Return Postage Guaranteed

RTTY in Foreign Lands

A Case History

By F. H. FLANTER ZS1FD

Although various articles on RTTY equipment and circuits had struck my eye for many years, they never really aroused any deeper interest. In retrospect this would appear quite normal and possibly accounts for the relative lack of participation in this mode of communication. However, the subject was brought home to me one night in September '59, when listening to an SSB QSO between W2ZXM and W1AOF when they decided to switch to RTTY. The language they used was just plain Chinese to me and for the first time I realised what a lay-person must think of amateur jargon in general. A little while later I managed to raise W1AOF himself and asked him questions on the subject of RTTY. For the first time I took in consciously that there were things such as Number 12s, 19s and 26s. Hints were thrown out that there was a wonder called Number 28, the gadget called a T.U., green keys and the rest. I went to bed somewhat bewildered, asking myself whether after 30 years of ham radio I now had reached the point of complete lunacy. It turned out to be the point of no return: Either make RTTY or bust.

One of the most useful pieces of advice received from W1AOF was to write to RTTY Inc. for details of printers etc., and to become a subscriber to the "RTTY Bulletin." A prompt and lengthy reply came along from Merrill W6AEE with lots of useful suggestions and a trunkful of back-numbers of the RTTY Bulletin. He also suggested that I contact G3CQE for some more information, as possibly his views might be more useful to me than those of a W-station. This is the point where the reader will have to try and visualise my situation, which is one most amateurs outside the U. S. will discover sooner or later: A lot of tantalising information but no access to equipment with which to turn it into reality. Still worse possibly, nobody with whom to discuss problems, so that all the mistakes which had been made elsewhere many years ago, would be made again all over. It is true, they are most instructive, but also very time-consuming and frustrating. In fact, the whole thing reminded me of my first steps in SSB many years ago, when the XYL's friendly advice was to quit it sooner than later, as I became even more difficult to live with.

The overshadowing problem was at the beginning only one: Where to obtain a printer? Merrill offered to ship out a Number 15 but this was declined as I feared that the question of spares and adjustment would prove difficult. This was borne out later on as quite correct. Meantime I put my plight to an equipment supplier in England and he promised to help. Within a short time he advised me that a "Teletype" machine was on its way to me. He was quite certain that it would fill the bill as it had done yeoman service for many years in the U. S. Embassy in London. The intervening period was filled with reading the accumulated RTTY Bulletins from cover to cover, including the Horse Trades. Then, at long last, the printer arrived and was unpacked with the excitement mounting. Well . . . it was a printer, there could be no doubt about that, but what was it? From all I had read it might be a number 12, but the book said that it had two motors. This one had only one on the printer, but nothing for the keyboard. It had no less than 34 little solenoids operating the type-bars, all sorts of extra clutches, ratchets and whatnots. Gradually it dawned on me, that this ancient might have worked as part of a whole bank of machines from a common distributor. Whatever it was, it could not be used, and to this day this relic has not been identified by anybody.

Meantime I had come across a fascinating bit of surplus which had been conceived as the control equipment for a flying bomb, no less. It contained three beautiful filters, a blocking oscillator triggered by an incoming signal, sensitive relays operated from audio tones, all too beautiful for words. It did not take long to have the relays clicking along with mark and space, but did it mean anything? The printer problem was still unsolved, so more avenues were explored, in fact I don't think there was any service in South Africa using teleprinters that I did not pester. Most harrassing were the cases where a half-hearted promise was made, only to be found without any substance later, much later usually. The months passed by, and still no printer. Meantime correspondence was maintained with both W6AEE and G3CQE and since then I have learnt that letter-writing is most essential for an advance in the art.

G3CQE was then using a Creed Model 3X, a very venerable tape printer declared obsolete by the British Post Office. I had been reading up on this machine in a weighty book "Telegraphy" by Freebody (published by Pitmans) and which I can recommend most seriously to anyone interested in start-stop telegraphy. So I knew that this piece of ingenuity used the International Alphabet No. 1, which differs essentially from International Alphabet No. 2, used exclusively on all American machines. Furthermore I did not relish crawling all over the floor in order to read lengths of tape. This seemed absolutely essential to judge by the many photographs published in the RTTY Bulletin and showing various gentlemen in undignified poses doing just that. However I was getting desperate and pleaded with Bill, G3CQE to send me one of these monsters at my own peril. He in turn discouraged me just as fervently, adding that added to all other disabilities known to me, this beauty used a roller on the type face which had the happy knack of splashing ink away like a spinning top. He assured me that the wearing of dungarees was essential unless one wanted to expose oneself to immediate divorce proceedings. Small wonder his wife was for ever taking swimming lessons during that period. Now re-entered the gentleman who had sent me the antique which had graced the U. S. Embassy. He maintained that he could send me immediately three Creed Model 7B page printers, brand-new and in their transit cases, and was I still interested. What are cable expenses to an enthusiast? Five weeks later the printer arrived, and this time I went for the tranquilisers before opening the cases. Indeed they were brand new and in this state had followed the British 8th Army in all its campaigns, never being used. The original test message of the factory inspector was still in the carriage, brown fox and all, and dated February, 1942. This was something all right. There was some minor damage but it seemed that 15 months waiting had at long last found its reward and the machine was carried home in triumph.

The intervening time had been used to scheme up a T.U., the first one of its breed. After studying all the circuits proposed, I settled for a single channel job, as its designer proudly announced that "it was better to generate as much of the signal locally instead of relying on the badly mutilated incoming signal." This seemed to make sense to me, I just did not know any better then . . . Also it appeared that all the two-channel jobs used those elusive 88mH toroids, which seemed to be the life blood of RTTY; on the other hand I had those beautiful filters from the surplus flying bomb, for which the American taxpayer had slaved so hard. To work we went—and something along the lines of W2PAT's original concept was cooked up. Here I should interpose that the Creed machines use a selector which is in fact a polarised relay, requiring only 12 mA neutral operation. All the keying circuits described were for Teletype machines consuming 60mA and single ended, whereas I needed push-pull operation, as I had read enough about relay arcing to discard this approach from the start. A DC bridge-keyer was not too difficult and the basic circuit has survived to this day.

The first T.U. took shape and when hooked up to the printer the milliammeter swung smartly from plus to minus when the space signal was tuned in, but print she would not. Now what? What can it be? Where do we start? Is this usual? Please remember, here I was many thousand miles away from any advice or help, and it seemed that there was nothing but to sweat it out, and that's how it went.

The next step was to rig up some kind of a test circuit as a source of 22 cps square-topped pulses to simulate the mark circuit. This was done with the aid of a pendulum-type telephone relay in a self-interrupting circuit, keying a 1000 cps tone, because that was the frequency to which the filter was tuned. It filtered fine, there could be no doubt (it was later measured as 30db down at 50 cps from resonance), in fact it was ringing so beautifully that the supposedly 22 ms long space pulse reappeared as a miserable little peak, too short to allow the printer to make selection. The filter was damped down with a parallel resistor and promptly lost all selectivity, but by that time a 500 cps filter for the 75A4 had arrived, so I had all the needed selectivity to back it up. With great excitement this T.U. (let's be charitable and call it that) was hooked up and the motor switched on

again. After tuning in whatever seemed like RTTY (most of it was undulators at work), the machine seemed to take on some kind of a rhythm and letter sequences began to appear, still not making any sense. However, there came the breath-taking moment when it did print the first complete word and that was . . . STOP — Whether this was well-meant advice sent by Providence I do not know to this day.

The transmitting side presented less of a problem. The transmitter being an HT-32, two circuits were found in the RTTY Bulletin and Hallicrafters came along with a third. I settled on the one described in the RTTY Bulletin of June '59 and it worked immediately and has never been touched since. Very favourable comments have been received on its stability both of frequency and of shift and it seems ideal for all conversion type SSB VFOs. That side certainly went swimmingly.

I now became daring and out went the first CQ RTTY on CW. This raised consternation amongst the CW fraternity and I was asked repeatedly what it meant. This seemed the wrong approach altogether. One night I heard an RTTY station sending CQ and printed him too, which was quite something. I took a deep breath and went at the keys: W8DU de ZS1FD and ED came back like a flash, in fact too fast for my liking as he was using a tape and I still had ringing troubles with my (single) filter. Well, I have been an amateur ever since I was a kid of 13 but this first RTTY QSO brought back to me the thrill of the very first QSO ever. To say that goose-pimples were marching up and down my spine is about a fair description. Ed reported a loud and strong signal and perfect shift and everything seemed to be just fine; it sounded too good to be true. When Ed signed, Jerry, W6TPJ called in, and it seemed as if I was in business, small, but my own.

The word got around quickly that there was a ZS active on the band and I soon made new and valuable acquaintances. It also became clear that my T.U. in its original state was pretty hopeless. It still used the Neon switching tube that W2PAT had advocated and the steep wavefront generated by it shortened severely the keying pulse. Just then the RTTY Bulletin for May '60 appeared with W6ZH findings on the behaviour of detector circuits. It seemed obvious that full wave rectification had something to recommend itself and the T.U. was modified once more, about the ninth time by then. By reversing the current to the polarised Creed selector I could even print upside-down signals but the amount of garbles coming in was quite appreciable. Ignition and other noise caused havoc, a drifting signal (there are such) would upset everything and bias distortion at the transmitting end made itself painfully felt. If nothing else, then I have been the cause of many fellows correcting theirs . . .

Meantime K3GIF had told VK3KF that I was around and a series of skeds was laid on for early Sunday mornings, before breakfast. This timing is important, because I had to work him or go without breakfast. My QTH is notoriously bad for working VK and 20 Watts of carrier power is not much at any time. However, VK3KF was printed in fine style, although he only got bits and pieces of my signal. ZK1BS also came up on frequency and was printed too but he had motor noise and could not print me at all. All this with a single channel T.U., woefully inefficient and of a design ignoring the basic principles of limiting or detection. However, I had now tasted blood and further, it became obvious that on RTTY I was running into the same breed of fellows who made SSB so enjoyable during its early days. I learned something new during every operating period, and the helpfulness of everybody I worked is something I shall remember for a long time.

If the concept of "generating as much of the signal locally as possible" now had been proved thoroughly unworkable, it had taught me a great deal about what a T.U. should really do. To this day I do not feel sorry about having embarked on the project in this completely wrong manner, as it definitely brought home to me what is required. Several other ZS- stations have come on in the meantime, all in the same manner and learning the same way, that is from their mistakes. Yet another fact had come out during this period: That very many of the T.U. designs published and used by my W-contacts were quite unsuited to DX working. With my miserable single channel job I would print fellows solid when they were struggling to obtain what they called "fair" copy. It seemed that most of the T.U.s in circulation were performing satisfactorily on S9 plus signals without QRM or QSB; but this happy state was not for me. Correspondence with VK3KF seemed to confirm this point of view, and he added to what I knew the factor of bias distortion

at the keyboard, of which I had been aware but had not realised its pernicious effect at the receiving end. By this time the RTTY Bulletin carried another of Don Wiggin's W4EHU fine articles, this time on the effect of noise on impulse distortion. (Nov. '60 Issue) More food for thought. Various fellows cut tapes of my transmission and "played" them back to me and comparing it with my local copy, a few more points were gleaned.

All these ideas started to boil up and were brought to finality with looking over the RTTY gear on board a U. S. missile tracking ship, which called at Cape Town. Here, T.U.s made by T.M.C. were used with a most intriguing CR tube tuning indicator, absolutely different from anything described so far. I now knew what I wanted; Sensitivity, drift correction, make up for bias distortion, allow for shifts less than 850cps and a system of mark-hold. Reasonable immunity from interfering signals was also what I wanted, plus local copy. I just could not figure out why so many fellows insisted on making local copy by picking up their own signal in the receiver. Here the Creed machine has a definite advantage as the single keyboard contact is of the change-over type so that on its back, so to speak, it can key a local circuit, similar to the one used by W6NRM in his latest creation. This brainchild took the form shown in the circuit diagram and worked fine from the start, except that the inductors used for the filters had too low a Q. Again a case for those famous 88mH toroids and here K3GIF came to the rescue by sending out four of these elusive doughnuts by air. Two of them lost their inner leads through careless handling, which cost me several nights off the air rewinding them, a nerve-calming job as everybody will know who has ever tried it. However, once these were installed, my filter troubles were over.

Results with this new T.U. have been most gratifying and full print is obtained from an input signal of 20mV across 60° Ohms. Noise measurements made would indicate that a signal 18db down in the noise will still produce solid copy. Some work is still going on to increase the sensitivity, so I can print even Merrill down here . . . At present it seems to be limited by the internal noise of the T.U. itself. And that is as far as I have advanced to date. I cannot remember any other project that has given me so much satisfaction and pleasure. To see the copy coming out of the printer in almost letter-press quality is a most satisfying feeling. Above all, meeting so many helpful spirits, either on the air or by correspondence, has been an adventure no self-respecting amateur can afford to miss. Whether you live in Asia (much needed for my WAC) or in Central Virginia, unless you try your hand at RTTY, you have led only half an amateur's life.

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33K and 68K resistors in series with filters: Adjust values for equal output from both filters. Easiest way is to measure DC voltage on discriminator output.

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Low pass filter: Most small 400 cps filter chokes ex surplus equipment have around 300 Hy with no DC. Aim at cut-off above 80 cps.

Coupling cond. .1 MF to clamp tube: Select highest grade quality obtainable. Leakage here is fatal.

Shift Control: Balances drift voltage on discr. line. Clamp will establish zero level based on shift. For 850 cps Shift control will be about middle of range and towards Earth for lesser amounts of shift.

Mark Bias: Establishes change-over level from mark to space and hence will compensate for bias distortion by choosing point of cross-over at zero.

Keyer mark current: Establishes maximum mark current.

Remember that keyer is designed for neutral operation and the current swing (12 mA plus and minus) is probably insufficient to operate selector coils, even in series. A polarised relay would be required. The 3K resistor in series with selector or polarised relay will help to square pulse by simulating a constant current supply.

Mark hold: This is due to pos. bias on Pulse Ampl. grid due to Shift control. Tikme constants are such that pulse ampl. will lock up positive in absence of space signal.

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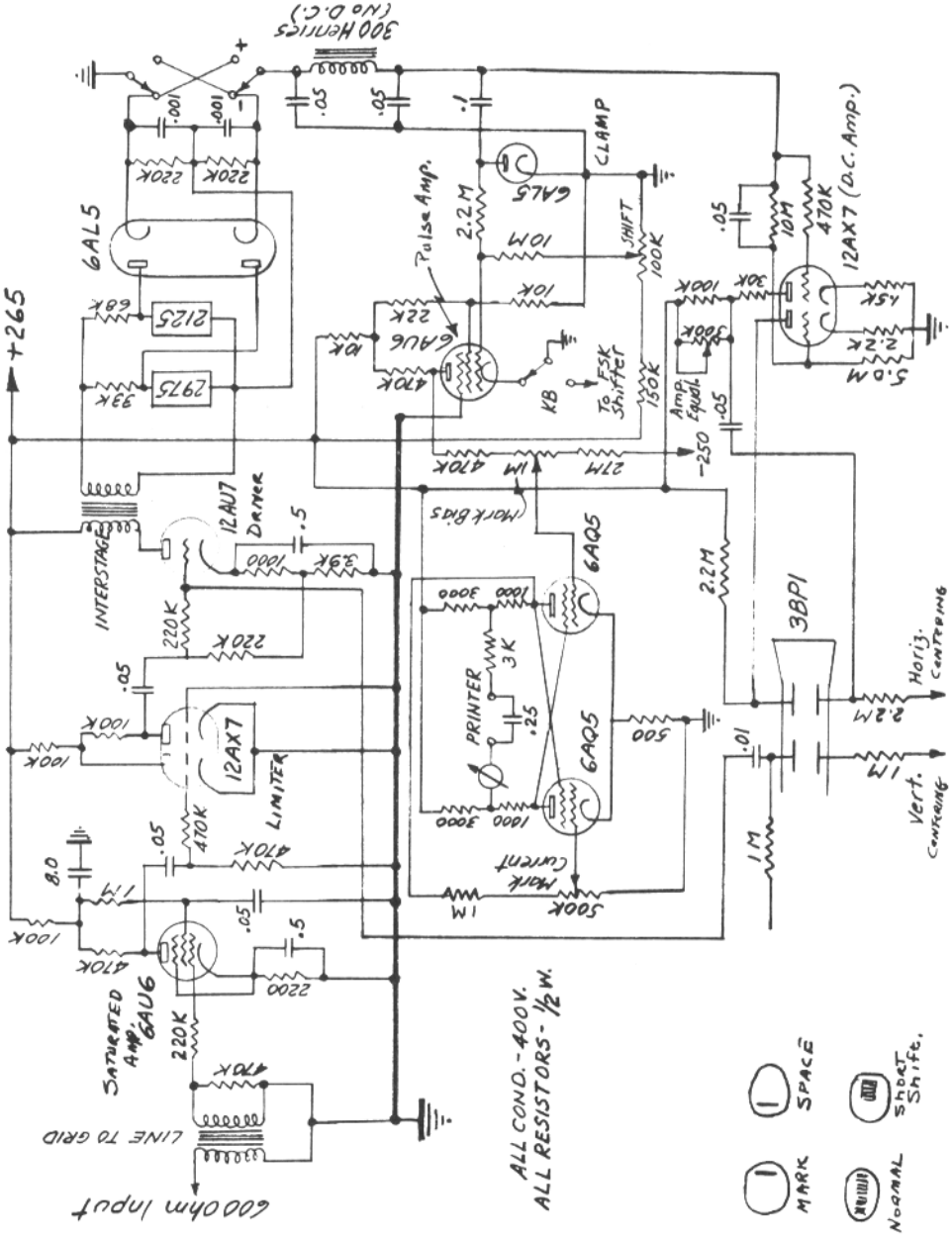

How To Adapt The 75S1 For RTTY Operation

By DAVID CHAPMAN, W9DPY, Lombard, Illinois

The following information is offered as one possible means of easily adapting the 75S1 for standard RTTY operation.

Preliminary Considerations:

1. Must not chop up receiver mechanically or ruin its resale value.
2. Must be low cost.
3. Must be simple.
4. Must furnish standard 2,125-2,975 cps tones.

Theory of Operation:

The 75S1 receiver consists of an RF amplifier, a crystal controlled converter and broad band first IF (untuned), a second mixer with a variable frequency oscillator covering 200 kc ranges and a fixed IF with mechanical filters at 455 kc feeding a detector and audio system. For teletype operation, the only part of this receiver requiring attention is the crystal controlled beat frequency oscillator.

As originally set up, the band pass of the receiver was controlled (in the sideband and CW position) by mechanical filters having a bandwidth of 500 cps or 2,125 cps with a center frequency of 455 kc. Obviously, the 500 cps filter is too narrow for the 850 cps teletype shift.

Therefore, the 2,125 cps filter is the only available filter. With this in mind, referring to Figure 2, we see that the mechanical filter selectivity gives a band pass of 2,125 cps centered on 455 kc. Now, in order to copy sideband properly, two crystal oscillators are furnished, offset from the center frequency by 1,350 kc. This keeps the reinserted carrier out of the IF band pass and reduces tuning problems to a minimum *for sideband*. As far as teletype goes, you do not have sufficient band pass in the mechanical filter to allow the reception of the 2,975 tone. In addition, the tunable oscillator is shifted by 1N34 diode supplied from 150 V + B so that as the crystal oscillator is shifted from the upper to the lower side of the selectivity curve, the main oscillator is shifted in the reverse direction by the same amount maintaining constant calibration. The addition of switches and components to maintain an exact calibration during RTTY reception appeared to be so complicated as to be undesirable. The dial calibration for RTTY is off by 2.5-1.3 or approximately 1.2 kc. (Note that this is 1.2 + 1.2 or 2.4 kc total from Low RTTY to Upper RTTY.) Due to the increased switching problems, it appeared desirable to allow the dial calibration to be 1 kc off for each of the two teletype frequencies.

In order to obtain correct frequencies, crystals with a center frequency of 455 + 2.5 or 457.5 and 452.5 kc were added to the set. In addition, a small relay was installed to cut in both teletype crystals simultaneously. What takes place is this: if the relay is not energized, the normal sideband crystals are in place and the receiver is in its original condition. Upon energizing the relay the two teletype crystals are placed in the circuit and teletype signals entering either 2.5 kc high or 2.5 kc low are tuned in the normal manner. As mentioned previously, the only objection is that their dial calibration is 1.2 kc from the actual frequency read.

In the 75S1 used for this system of operation, a noise blanker occupied the entire center section of the receiver leaving practically no room. It is not necessary to use a double-pole double-throw relay, it is only necessary to have a double-pole double-throw switch. If the noise blanker is not in the receiver, a small rotary double-pole double-throw switch will work just as well and remove a number of complications.

The relay was mounted on a bracket that was handy. It was bypassed with .005 ceramic condensers to keep RF out of the receiver itself. If you look at the 75S1, you will find that all of the leads coming in and out are bypassed RF-wise, which reduces extraneous pickup from noise sources in the neighborhood.

Actual installation is quite simple. A small bracket can be used to support the relay and the two sideband crystals Y15 and Y16 are removed from the sideband selecting switch, leaving their other side intact. The arm of the relay contacts marked by X and Y are then tied to these same points on the sideband switch S9. The additional crystals on 452.5 and 457.5 have one side tied to the common lead between Y15 and Y16.

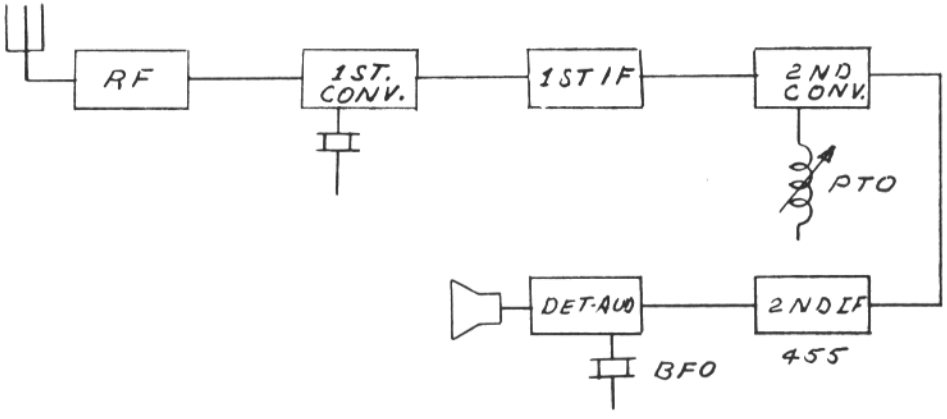

FIG 1. - 75S1

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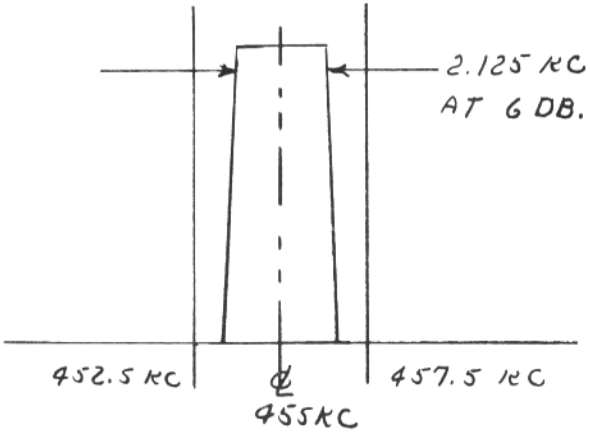


FIG. 4. DEE 3/10/61

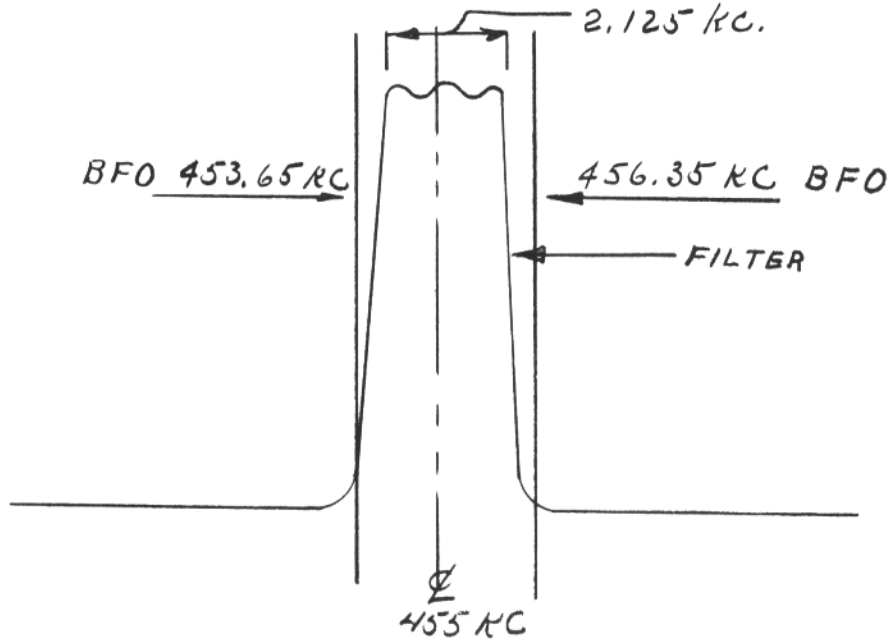


FIG. 2 DEE 3/10/61

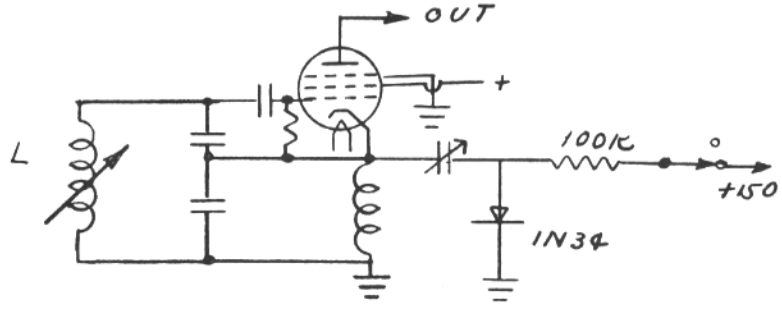
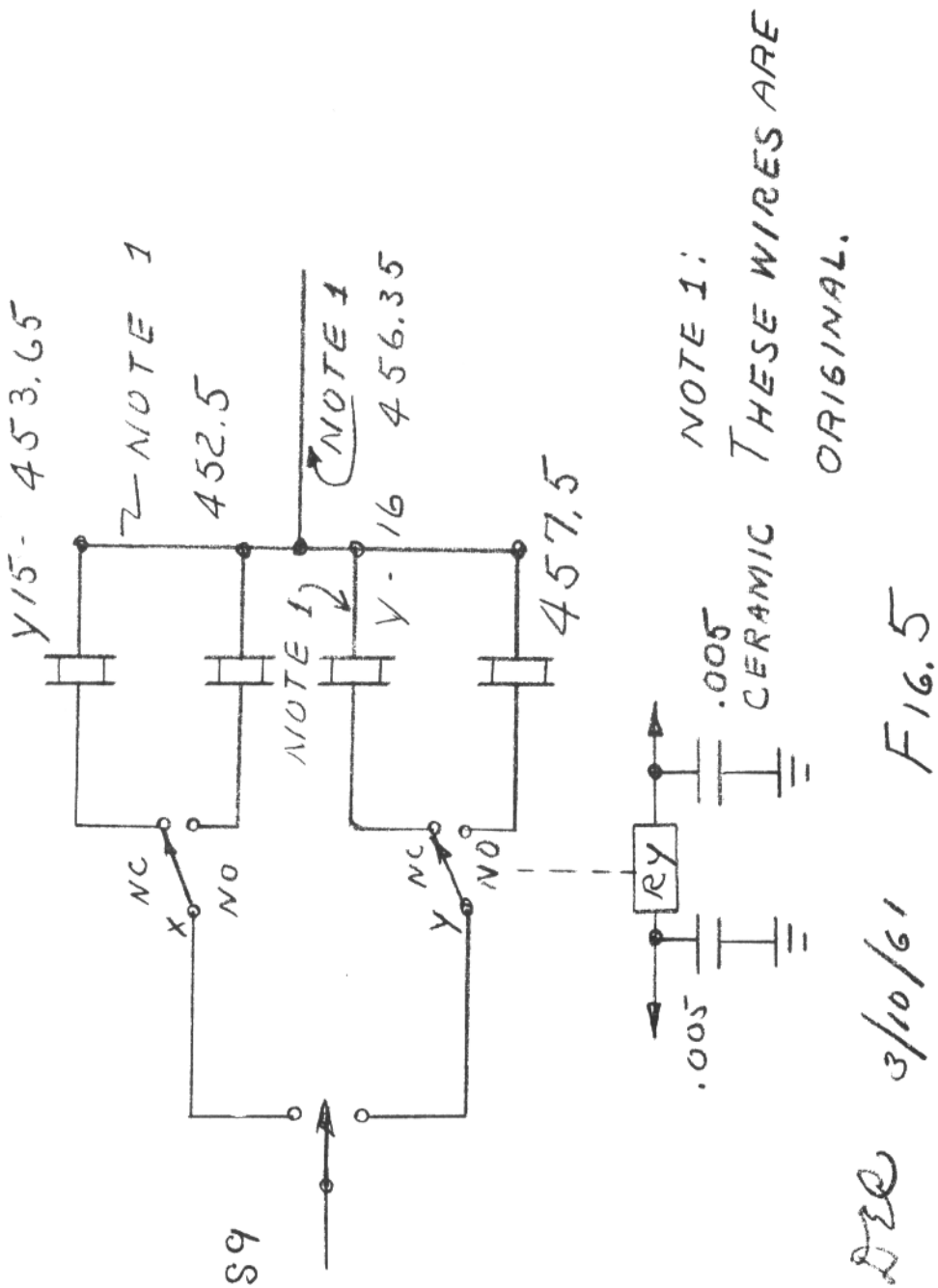


FIG. 3

DEE 3/10/61



RSQ 3/10/61 FIG. 5

EIGHT ANNIVERSARY RTTY SWEEPSTAKES RESULTS

Top scores for this contest were W3PYW 10,416, W6YJG 8,800(?), W2RUI 8,000, W9EWC 7,956, W7ESN 6,480, W2JAV 6,440, W6AEE 6,090, W7FEN 5,152, KH6IJ 4,544, W7PHG 4,514.

Other stations taking part, with scores from logs received by RTTY:

W1AOH, W1AW 2,544, W1BGW 2,781, K1CPX, W1EFT, W1FGL/W1FSH 738, W1HRC, W1HRL, W1JRV, K1KFR, W1KQY, W1KUH, W1OUG, W1QP, W1VSA, W1YDA, W1YYZ, W6CAP/1.

K2ECQ, K2EWB, W2EXB, W2FAN 109, K2GKM, W2JAV 6,440, W2JJC, K2JJC, K2KGJ, W2ODA, W2PAT, W2RTW, W2RUI 8,000, K2SOX, K2SKK 2,376, K2SSX, K2TRN 24, W2UAE, W2UGM, W2VMN 2,688, K2YEL.

W3CA, W3CRO, W3DJZ 3,844, K3GIF 588, W3ITO, W3LDQ, W3PYW 10,416, W4AWY, W4BOC 1,518, K4DSI, W4EHU, W4FEH, W4GJY, W4SSS, W4VCC, W4WKY.

W5APM, K5BVM 112, W5CCD, W5CSN, K5HSW 701, W5JBW, W5KWL 1,444, K5MBB, K5QBU 704, W5SGJ, W5SWJ, W5TVG, K5ZXG, KØTZF/5.

W6AEE 6,090, K6BNS, W6CCL, W6CG 2,744, K6EER, W6FYM, W6HAL, W6HIF, K6IXA, K6JLB, K6LIB, K6LIP 1,680, W6LRT, W6MTJ, K6MTX 28, W6NRM, W6OTX, W6OWP 600, K6OWQ 1,050, W6VLD, W6YJG 8,800(?), W6ZFT, K6ZHB, K5KIB/6, W0IGL/6.

W7CBY 260, W7ESN 6,480, W7FEN 5,152, W7FJU, W7LPM, W7PHG 4,514, W7PQJ, W7ZT.

W8ACN, K8AEH, W8AQA, W8BZB, W8CAT, W8CSH 680, W8CUY, W2CVA, W8DVL, W8HMM, W8HYX, K8JIB, W8JKJ, W8KJK 3,534, W8LEX 608, K8MYF, W8ORD, W8PHG 3,360, W8PXA, W9QMI, W8SDZ, W8TPB, K8UFU.

W9AOV, K9BHD, W9BMV, K9BRL 646, W9COW 240, K9DAS 506, W9DJE 252, W9DPY 450, K9EHP 1,160, W9EWC 7,956, W9FRU 340, W9IOV/9, W9IUV, W9LFK 364, W9QZO, W9RDJ 324, W9SPT, K9STP, W9YBA, W9ZGC, W9ZXN.

W0ABA, W0BIDZ, K0BEC, K0BER, W0EUS, W0FQW, W0FTD, W0GK 4,185, W0GUP, W0HVY, W0IFS, W0IJG, W0JFI, W9JHS 300, K0JLG, K0JLX, K0JWS, W0KQO 1,080, W0KXB, W0LOE, W0MNA, W0NIT, W0OHW, W0OKH 832, W0PFI, K0PFU, W0PQY, W0QWY, W0RX, W0TTN, W0UQS, K0WXV 80, W0YIQ, K0YUS, W0ZB 1,260.

G3CQE, KH6AED, KH6ANR 288, KH6IJ 4,544, KL7MZ 1,976, VE3CM, VE3DJX, VE4BJ 2,550, VE6HQ, VK3KF 96, ZK1BS, ZL1WB, ZS1FD 64, ZS6KD, W0PHM/VO1 768.

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The other sides of these crystals then go to the down contacts on the double-pole double-throw relay. This makes a total of four wires and twelve solder joints for the entire job so that it really should take less than 15 minutes to make the change.

CONCLUSION: The information offered is one means of adding standard teletype operation to the 75S1 receiver. It is simple, low cost, straight forward and does not require any tuning up or adjustment whatsoever. It either works or does not work.

Best of regards and let me hear from you.

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RTTY is the Official Publication of the

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W6DEO W6CG W6AEE

DX-RTTY

By BUD SCHULTZ, W6CG
5226 N. Willmonte Ave., Temple City, California

Howdy Gang:

Dx reports to my listening post have dropped off to a mere trickle this past month so I will do my best to bring you up to date with the material at hand. The higher frequency bands have either been "wide-open" or completely dead here on the Coast for the past thirty days. When the former condition existed, signals from any part of the Globe have been land-line copy but on many days even the key clicks from my novice neighbor were scarcely audible! ! For now we will just dwell on the good days. Bill, G3CQE, made some changes in his antenna set-up which put his signals in the top bracket. Whenever the fifteen meter band is open Bill has been coming thru like "gang-busters." Bill is still frantically looking for that elusive Asian contact for his WAC and any info on this problem will be greatly appreciated by him. Bob, G3GNR, spent the Easter Holiday with A1, G3FXB, and is still drooling over the excellent DX conditions he encountered at Al's place. I had a fabulous QSO with both Bob and Al with signals S-9 in both directions, including a 45 minute chat on (Excuse the expression) SSB. Bob is now busy putting up a new antenna pole for his beam and building a new P.A. Jan, PAØFB, has been showing up here on the Coast again after an absence of several months. Jan managed a QSO with ZS1FD which was another RTTY "first" for both Jan and Henry.

The only known FSK stations in Africa at the moment are ZS1FD, ZS1NE, ZS6CR and ZS6KD but W6VPC reports that the NCARTS gang are busy rounding up gear for ZE4JN and ZE6JG. From "down under" the same steady activity continues on fifteen and twenty with VK3KF and ZL1-WB leading the pack. Reported also, this month, is the return to active duty of Alec, ZL3HJ. Letters from VK2EG, VK2AIR, and ZL2AFZ indicate that more activity can be expected from this area as soon as the necessary gear can be found. Bill, ZK1BS, still manages a few RTTY QSO's each week with his usual fine signals on both fifteen and twenty meters.

The newest addition to the DX gang is KM6BU. Ken made his debut this month with one of the best FSK signals to hit the RTTY frequencies in many a long month. KM6BU operates mostly on week-ends because of his work schedule. He can be found around 14,090 Kcs. any Saturday or Sunday whenever the band is open to that part of the Pacific. Welcome to the Green Key Dx Club, Ken! ! For QSL purposes KM-6BU's QTH is: LCdr. K. H. Pitou, AEW-BARRON PAC DET., Navy #3080, F.P.O. —San Francisco. Speaking of QSL's—Eric, VK3KF, writes that he has lost some of his logs and anyone needing a QSL from him can let me know and I will see that the situation is taken care of without delay.

The Editor in Chief (W6AEE to you) after attending the RTTY Dinners in Boston and New York made a brief stop-over at the DX headquarters of K3GIF and reports that DX conditions to Europe and Africa from there would make the West Coast gang turn green! ! Merrill had some excellent contacts with ZS1FD, G3CQE, G2RF from Ed's place and he shared the keyboard honors with Frank White, W3PYW. As a souvenir of this DX gabfest Merrill brought back about 60 feet of very interesting copy. The copy itself would have made a very swell DX column but if we had used it this month's issue would have been about the size of the Saturday Evening Post ! !

Many thanks to VE7KX, W8JIN, G3CQE, VK3KF, K3GIF, ZL1WB and others for suggestions regarding the rules changes for the next SS contest. The committee is hard at work evaluating them and trying to come up with a new set of rules that will make the contest a better deal for all. There's still time to get your own personal views into the committee if you hurry!

Those of you who are "DX minded" should not pass up the propagation notices put out by WWV/WWVH twice each hour. These notices apply to the transmission paths over the North Atlantic and Pacific and are invaluable to the DX'er. They consist of a letter followed by a number and give an accurate appraisal of DX conditions at any given time. The letter designations have the following significance:

W—Ionospheric disturbance in progress or expected.

U—Unstable conditions, but communication possible with high power.

N—No warning.

The number designations apply to expected propagation conditions during the subsequent 12 hours and have the following significance:

DIGIT	FORECAST
1.	Impossible
2.	Very Poor
3.	Poor
4.	Fair to Poor
5.	Fair
6.	Fair to Good
7.	Good
8.	Very Good
9.	Excellent

These announcements are put out by WWV for the North Atlantic Path at 19½ and 49½ minutes after the hour and by WWVH for the North Pacific Path at 9 and 39 minutes after the hour. You will find them very worth-while aids to your DX hunting. For instance: if you crawl out of the sack early some morning to catch a new country or two and WWV announces conditions as "W-1" just crawl right back and get that extra hour of shut-eye. On the other hand if they come up with "N-9" have your wife call the boss and tell him you are too sick to show up at the office and then settle back for a real day of fun in the ham shack!

Enough for now—CU next month—73

Bud W6CG

—0—

STOP THE PRESSES ! !

Just as I put the last period to this column EL1C, Marty, showed up on 21,090 and announced he is printing RTTY from the States and will be transmitting as soon as he receives an audio oscillator from Ed, K3GIF. Ed also reports working Shank, GM8FM, on twenty which is a real good piece of news. Bill, G3CQE reports that DL1GP is now active and some of the UK boys already have him in their logs. More details on these in next month's column.

73 .Bud – W6CG

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"ARMED FORCES DAY" Amateur Communications 20 May 1961

RATT RECEIVING CONTEST

Time 20 May 1961

Transmitting Station	Frequencies (KCS)
210335Z (2235 EST)	
WAR (Wash., D.C.)	3347, 14405, 20994
NSS (Wash., D.C.)	3319, 7375, 14480
AIR (Wash., D.C.)	7915
210335Z (2135 CST)	
A5USA (Ft. Sam Houston, Texas)	5395
NDS (Great Lakes, Ill.)	7455
AG5FFR (Randolph AFB, Texas)	7305
210335Z (1935 PST)	
AG6AIR (Hamilton AFB, Calif.)	7832.5
A6USA (Army Radio San Francisco, Calif.	6997.5
210345Z (2145 CST)	
NDF (New Orleans, La.)	7380
NDW (San Francisco, Calif.)	3319, 7375
NPD (Seattle, Wash.)	7455

MILITARY-TO-AMATEUR TEST

Military stations WAR, AIR, and NSS will be on the air from 201500Z (1000 EST) to 210500Z (2400 EST) on 20 May 1961 to contact and test with amateur radio stations. Amateur contacts will be discontinued from 210245Z to 210400Z to allow the Armed Forces Day CW and RATT broadcast competition in accordance with the schedule above.

Station Military Frequencies
Appropriate Amateur Band (megs)

WAR (Army Radio, Wash., D.C.)		
4020	(AM)	3.8 to 4
4025	(CW)	3.5 to 3.8
6997.5	(CW)	7 to 7.2
20994	(CW)	21.1 to 21.25
NSS (Navy Radio Wash., D.C.)		
4010	(CW)	3.5 to 3.8
6970	(CW)	7 to 7.2
13680	(CW)	14 to 14.2
14480	(CW)	14 to 14.2

Automatic Frequency Control With Silicon Capacitors

By NICHOLAS G. MUSKOVAC, K8DXV
P.O. General Delivery, Stamford, Connecticut

This article will describe a relatively simple AFC circuit. It was designed to be used for RTTY frequency shift keying operation. It does not use vacuum tubes, transistors, or amplifiers of any kind.

Any RTTY operator who sits with one hand on the tuning dial of his receiver will appreciate the addition of an AFC. This little circuit will take care of any drift in your receiver as well as the other fellow's transmitter drift.

PRINCIPAL OF OPERATION:

Fig. 1 shows a schematic diagram of the AFC and is complete with all values. Two tuned circuits, which use 88 mh. torroids, set the locking frequency. One is tuned 125 cps above and the other 125 cps below the frequency to be controlled. I chose the space frequency (2975 cps) since the Q of the tank circuits will be higher than on the mark frequency of 2125 cps. The circuit should operate just as well on either frequency. D_1 and D_2 are silicon diodes and are used in a discriminator circuit. By using a D.P.D.T. switch, the diodes can be switched back and forth so that they can control receivers with BFO's that are above *or* below the I.F. frequency. The tuned filters and discriminator section can be mounted on a small board and built into or near the terminal unit. The rest of the circuit, which consists of four small components, can easily be mounted in the receiver. A shielded cable should be used between the discriminator output and the receiver in order to eliminate 60 cycle pickup.

D_3 and D_4 are the silicon capacitors and are commercially known as VARICAPS. They are actually silicon diodes and have the familiar forward and reverse characteristics. Two of them are used in this circuit (back to back) to eliminate conduction in the forward direction from the voltage present in the tank circuit. D_4 is the controlling diode D_4 decreases with increasing voltage by the control voltage. The capacity of the diode D_4 decreases with increasing volatge across it and increases as the voltage across it decreases.

Whenever the input frequency to the AFC unit tries to change, a corrective voltage is applied to the diode D_4, and the BFO automatically changes until the correct beat frequency is obtained.

PERFORMANCE:

The frequency regulation obtained with this unit has been more than satisfactory on all bands. The amount of frequency drift that it can correct is limited only by the band pass frequency of the receiver. I use the Heathkit Comanche which has a 3 kc. band pass. The other fellow's transmitter can drift 1500 cps before I lose copy on my teleprinter!

The AFC is especially useful on the higher bands. We have a Ten-Meter Net in Cleveland, Ohio, and I have no trouble getting solid copy while relaxing or making a pot of coffee.

The AFC unit just described can be built in less than 2 hours and for about $10.00. The whole thing is powered by two penlight batteries that draw microamps of current and should give shelf life. The Varicaps used are PSI 20 micromicrofarads. However, any other type with the correct capacity range can be used. The input signal is coupled directly from the filter in the terminal unit.

73, Nicholas G. Muskovac, K8DXV

1. A shielded cable should be used between X-Y & X′-Y′.
2. SW, is AFC ON - OFF.
3. The 88 mh. coils are torroids.
4. D_1 & D_2 are silicon diodes (TI 2069).
5. SW_2 is used to control receivers with B.F.O. above or below I. F. frequency.
6. The tank circuits can also be tuned to 2000Ω & 2250Ω if locking on the mark frequency of 2125Ω is desired. I used 2975 since the Q of the circuit is higher at this frequency.
7. D_3 & D_4 are silicon capacitors.
8. Two penlite batteries are used for the 3 V. supply.

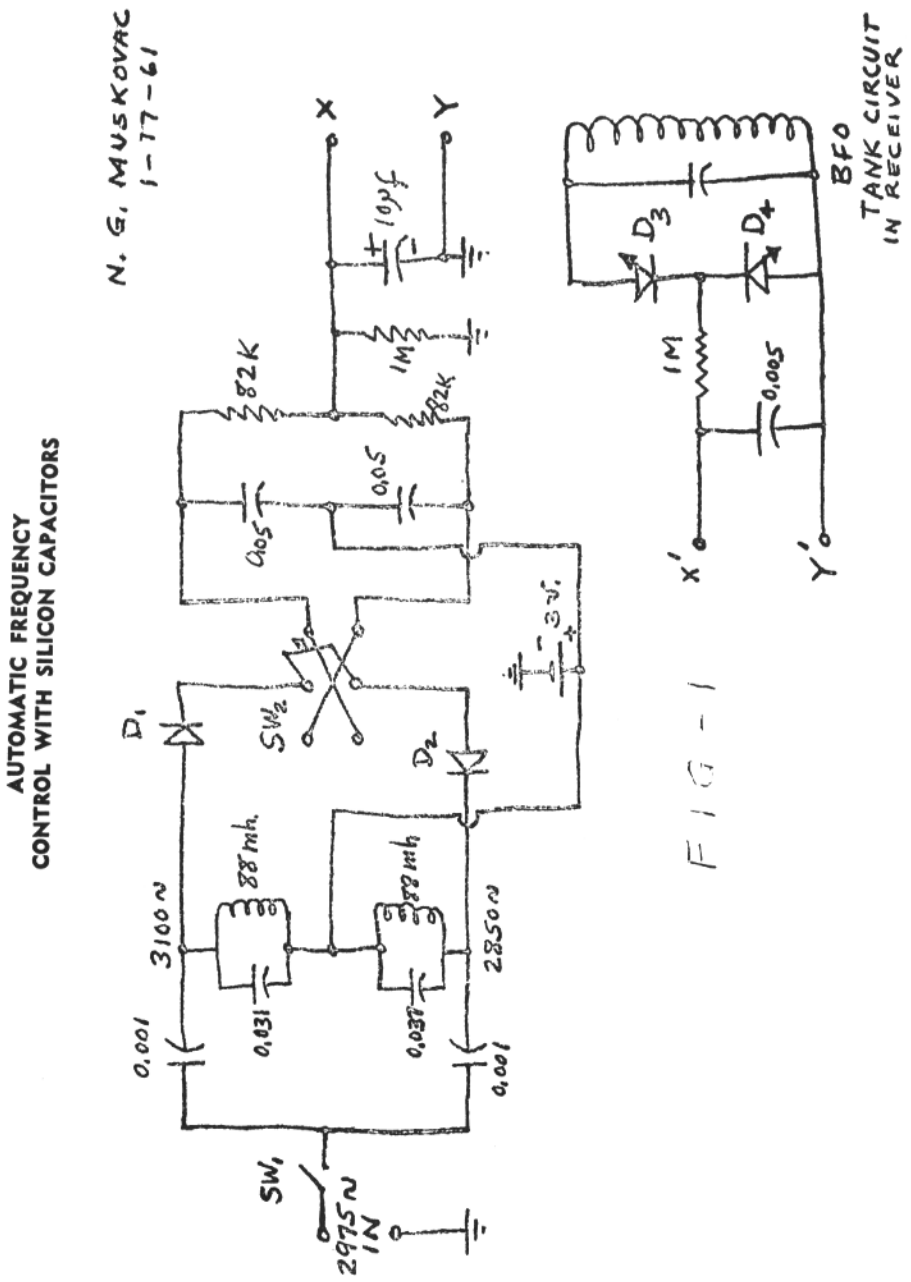

FIG - 1