

Second Two Steps Have Been Taken on Our Proposal to Amend FCC Rules to Permit Use of Frequency Shifts Other Than 850 Cycles

The June issue of RTTY (Pages 10 and 11) reported the current status of the proposal to have the FCC "Rules Governing Amateur Radio Service" amended to permit the use of frequency shifts other than 850 cycles, plus tolerance— 850 ± 50 . Significant progress has been made since that time, as follows:

1. Mr. Budlong discussed the proposal with FCC and disclosed no objection to proceeding with the submission. The ARRL's attorney (Mr. Segal) was asked to prepare a submission and forward it to FCC.
2. Mr. Segal, acting for the ARRL, on July 6, 1955, submitted the following proposal to FCC.

Petition for amendment of Paragraphs 12.107 (c) and (d) of the Rules Governing Amateur Radio Service, titled "Special Provisions Regarding Radio Teleprinter Transmissions."

Petition of the American Radio Relay League, Inc.

The American Radio Relay League files this petition on behalf of the more than 47,000 U.S.-licensed amateur radio operators who are members of the League.

This petition was formulated pursuant to instructions of the Board of Directors of the League.

The League proposes that the present restriction on frequency-shift keying in the amateur service, now 800 to 900 cycles shift, be removed and that instead there be permitted any shift under 900 cycles. Specifically, the League proposes that Section 12.107(c) of the amateur rules be amended to read as follows:

(c) When frequency-shift keying (type F-1 emission) is utilized, the deviation in frequency from the mark signal to the space signal, or from the space signal to the mark signal, shall be less than 900 cycles per second.

and in consonance therewith, that Section 12.107 (d) be amended to read as follows:

(d) When audio-frequency-shift keying (type A-2 or type F12 emission) is utilized, the highest fundamental modulation audio frequency shall not exceed 3000 cycles per second, and the difference between the modulating audio frequency for the mark signal and that for the space signal shall be less than 900 cycles per second.

This proposal is based on the following considerations:

Experimentation

In recent years, with the availability of teleprinters to the Amateur Service, a number of experimentally-inclined amateurs have been using radio teleprinter communication, first with audio-frequency-shift keying primarily on the 144-Mc. band and, since the Commission's

authorization for the use of F-1 emission on lower-frequency bands, with carrier frequency-shift-keying in the non-voice portions of the 3.5-, 7-, and 14-Mc. bands. Although at one time the number of available printer units sharply limited the number of amateurs who could engage in this work, at present there is an adequate supply of such units with the result that amateur use of F-1 teleprinter communication is increasing rapidly. The League believes that this is another field in which the amateurs can contribute to the advancement of the art, but amateurs are now handicapped with the limitation of frequency shift within the range 800-900 cycles per second. A number of leading amateurs in this field have indicated a strong interest in conducting experimental communication with lesser frequency shift, and the League believes they should be encouraged to do so. It is understood that commercial and military research groups also feel that a shift of considerably less than the present 850-cycle standard may well be found to be much more effective in teleprinter communication. The League urges the Commission to permit amateurs to take part in this investigation.

Improvement in Techniques

A reduction in permissible frequency shift will allow the use of receivers with narrower band width, resulting in an improvement in signal-to-noise ratio. It will be possible to sharpen intermediate-frequency filters and amplifiers. It is also expected that a reduction in frequency shift will lessen the effects of selective fading, since this problem is eased when mark and space signals are brought closer together. A smaller frequency shift is also more easily obtainable when using crystal control, compared to the present

difficulty of achieving direct 850-cycle shifts with 3.5-Mc. crystals.

Reduction in Interference

Although this is a matter of lesser importance,—it should be mentioned (if only to point out that potential interference to other types of emission in these amateur bands will certainly not be increased) that it is expected the use of a lesser frequency shift will accomplish a reduction in interference. Since, practically speaking, an F-1 signal uses the spectrum space of a c. w. signal with corresponding on-off keying, plus the frequency shift, it is apparent that a smaller shift will occupy less spectrum space and thereby provide less opportunity for interference.

In summary, the League believes that authorization for amateurs to employ F-1 emission frequency shifts less than 900 cycles per second will permit more extensive experimentation with radio-teleprinter communication, will result in an improvement in and simplification of teleprinter techniques, and thereby will provide a more reliable means of communication.

American Radio Relay League, Inc.

By (signed) Paul M. Segal

By (signed) Quayle B. Smith
Segal, Smith & Hennessey
816 Connecticut Avenue
Washington 6, D.C.
Its attorneys

(signed) A. L. Budlong
General Manager
July 6, 1955

The League's submission is a clear and factual statement of what we asked to have accomplished. The next two moves are up to the FCC. The Public Safety and Amateur Division of FCC has al-

ready prepared its submission for the review (and we hope approval) of the FCC Commissioners. Unfortunately, however, the Commission has taken its vacation "en masse" during the month of August. Thus it can take no action on the Division proposal until it returns.

Let us assume, for the purposes of analysis, that the FCC approves the proposal. It will then be submitted (via the Federal-Register, a public release media) for public comment. This is the normal procedure for proposed changes of FCC Rules. Time will be allowed for QST, CQ RTTY, and other amateur publications, to publish the proposal with a deadline for public comment. When the deadline for comments is reached, they will be reviewed and the FCC will act. We are predicting still that the Rules will be amended as we desire, and that by this fall we will have a "green light" to use any shift from 900 cycles on down.

What Does The Proposed FCC Rule Change Mean To the Average Ham Now On RTTY?

To the average amateur now on RTTY the FCC Rule change (when effective) will not mean much, to begin with. However, it will permit the average ham, to set up his frequency shift without worrying as much about getting a pink ticket for missing the 850 cycle shift by fifty cycles. (A few tickets have been issued—you know.) He will have to set the shift to less than 900 cycles,

As is the situation with any new idea, that is introduced into an existing system, the intentional use of lesser shifts than 850 cycles will be on limited experimental basis. Amateurs that have the urge to experiment will undoubtedly still

retain the availability of copying and sending on 850 cycles so they will not "lose touch" with the rest of the RTTY clan. To the contrary we have noted comments on the air that the "Proposed Rule change will make frequency shifts unstandard and nobody will be able to copy anybody". This sort of comment ignores a lot of facts. Amateurs are now equipped to use 850 cycle shift, they will continue to use 850 cycle shift unless they wish to experiment with lesser shifts in which event they will provide **alternate equipment**—nine times out of ten—and not change an existing—good converter that copies 850 cycle shift. So "Save your Confederate Money—your converter for 850 cycle shift" its going to be 99.9% useable for many years. Maybe this fall you will hear a few fellows on the air with lesser shifts and you want to know how the "new" shift works. If you start hearing that the "new" shift is a "big improvement" you may want to **ADD IT TO YOUR EXISTING CONVERTER**. This may mean one new set of filters (we hope you have room on the chassis) and a switch. But if you are satisfied with 850 cycle shift, you leave everything as it is, and are happy as a "clam".

In the next few issues of RTTY we will suggest, for your review and consideration, ways of modifying existing RTTY converters to provide for both 850 cycle shift and 170 cycle shift. You may want to modify your converter this summer so it can copy both 850 cycle shift and 170 cycle shift since it looks like 170 cycle shift will be used by most of the fellows that want to experiment with shifts less than 850 cycles. Your comments and ideas on the "new look in Amateur RTTY" are invited.

Description of 26 Tape Distributor

Bob Unsworth, W6MTJ, San Francisco, Calif.

Functions of Control Switch:

1. Pulls out distributor "throw-out clutch lever" (see Fig. 59 in "26" Manual).
2. Opens and closes contacts on left hand side of contact assembly.
3. Pulls down letters key, which then allows all sections of selector cam to operate all contacts on the contact assembly (by means of bronze dial cable attached to arm).
4. Opens and closes circuit to tape puller magnet.

Control switch made of standard index unit manufactured by Centralab, Index Ass'y #P-123, and Switch Wafer Sections, #1408 (4 pole—2 pos.), using two sections gives 8 pole—2 positions—five sets of contacts used for code contacts and one set used for magnet circuit, leaving two un-used.

Tape puller circuit completed through switch which is operated by "lock loop roller" on distributor (see Fig. 56 in "26" Manual) adjusted so switch **closes** only when high spot of "lock loop cam" raises "lock loop roller" and **opens** as roller comes to rest position. This can be made of any switch leaf with moderate temper and contact capable of approximately ½ amp current; spark and arc arrester of 30 ohm resistor and 1.5 mfd condenser in series should be used across this con-

tact unit. Have one leaf backed by thin strip of micarta to insulate leaf from lock loop roller.

Lever which pull out "throw-out clutch lever" and pull cable to actuate letters key are mounted on 26 base by means of bracket screwed to base and fastened by one large screw, to allow positioning after mounting (tighten after it is positioned correctly).

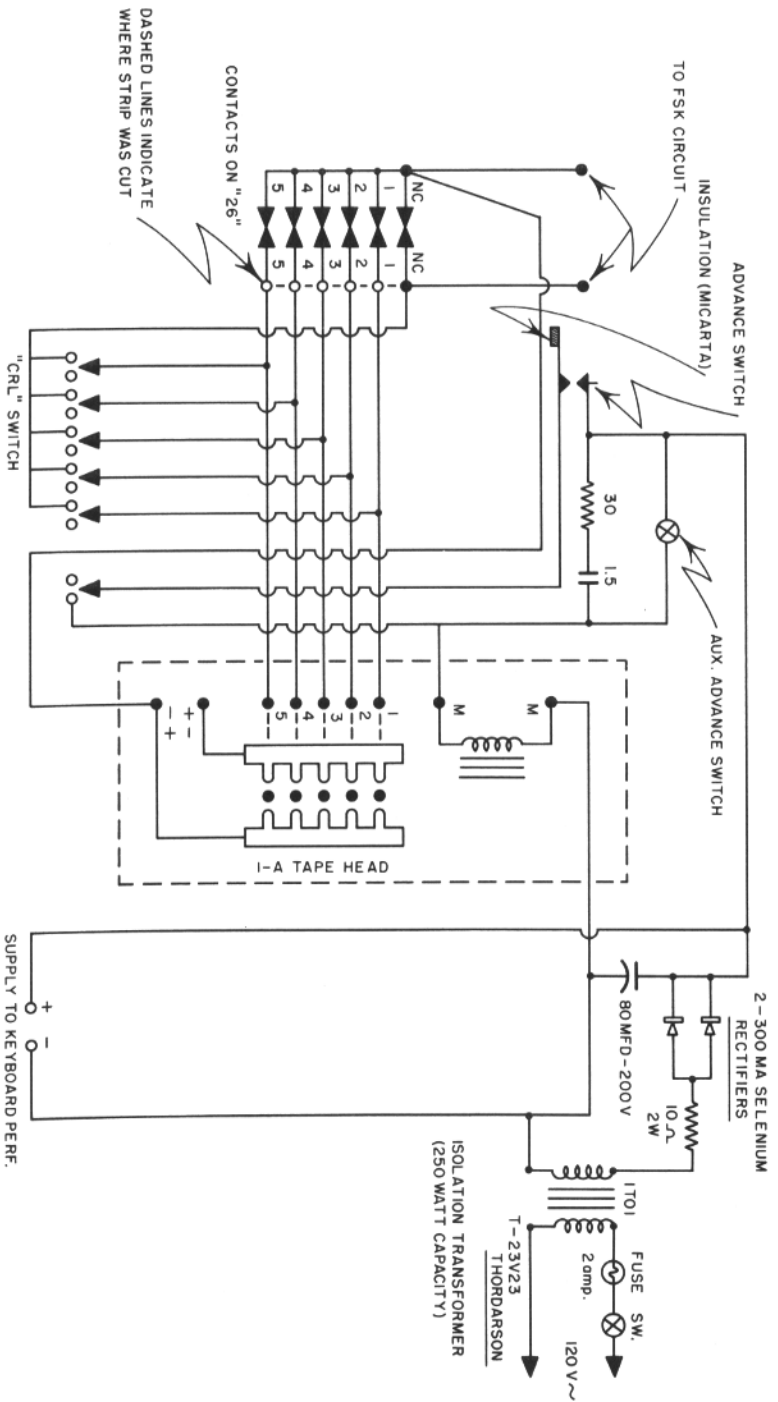
Hole is drilled in base at appropriate place to pass bronze cable for letters key control.

Small springs are attached on ends of the two operating levers to eliminate excessive strain on parts (be sure to have small amount of play in clutch spring when in normal keyboard position, otherwise keyboard will be stiff to typing touch).

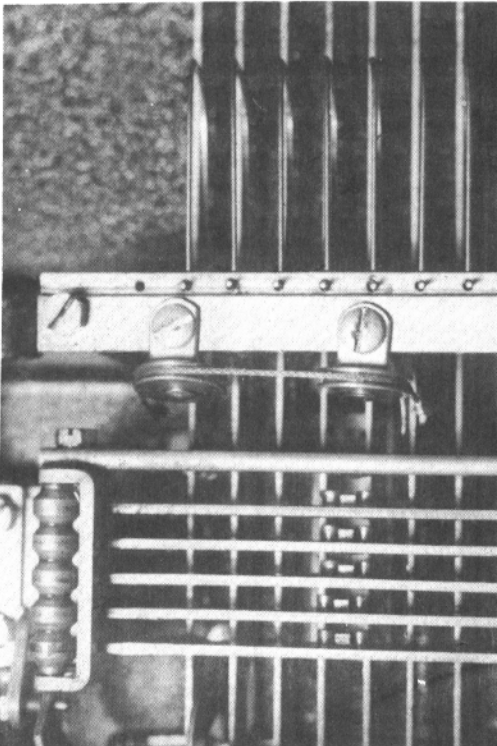
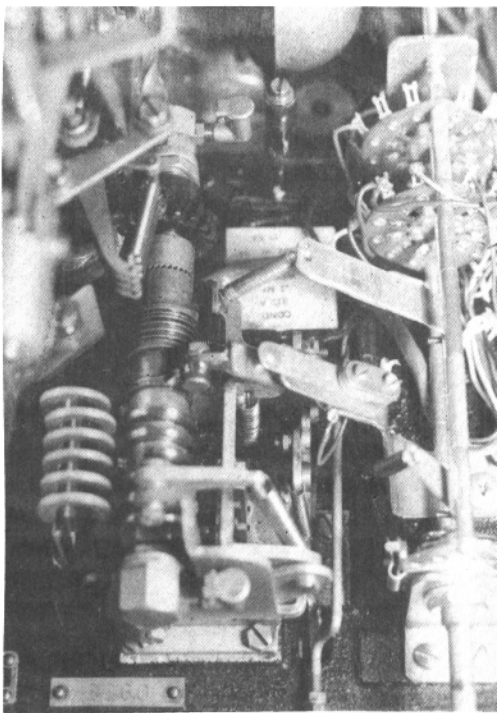
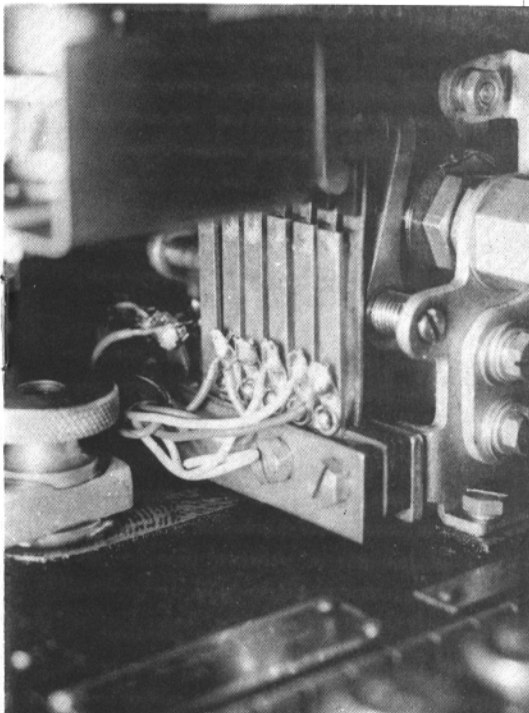
Left side of contact strip should be carefully cut with fine jeweler's saw and all rough edges worked off, then re-assembled carefully with cement between cuts and the contacts aligned to the original positions.

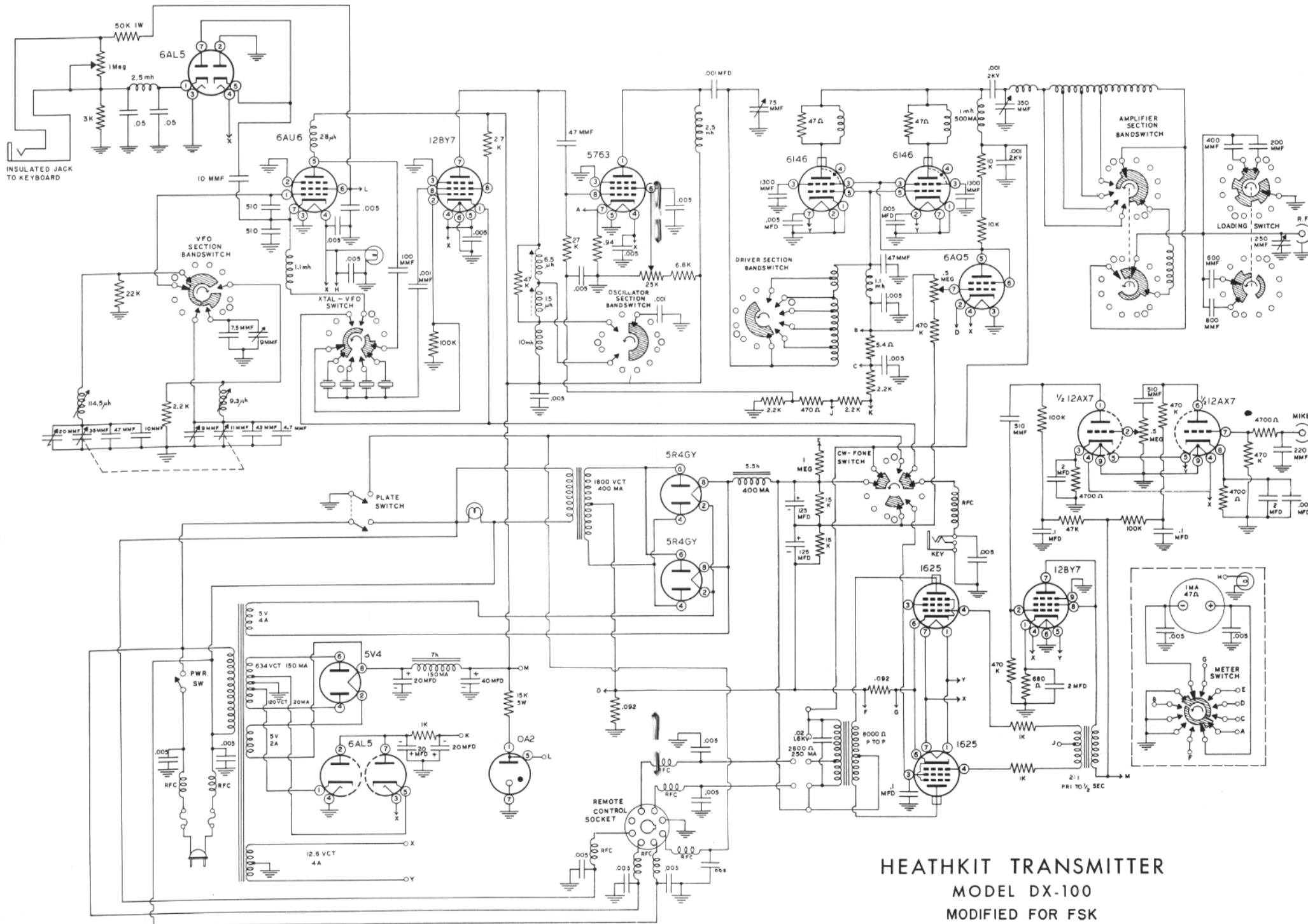
Small slot will have to be cut in the cover of the 26 to allow cover to come down past the switch shaft.

Brass pulleys with angle brackets attached can be procured from writer at fifteen cents each. Other parts are readily obtainable at "Ham" supply houses or out of junk boxes.



IN USE AT W6MTJ
SAN FRANCISCO, CALIF.





HEATHKIT TRANSMITTER
 MODEL DX-100
 MODIFIED FOR FSK

Modification of Heath-Kit DX-100 for FSK

By MERRILL SWAN, W6AEE

For those amateurs wishing to operate FSK (RTTY) with least effort on their part, the DX-100 is the answer.

CQ for July 1955 carried an article by Jim Morrissett, W8BAJ/2 describing the DX-100 in detail. The following modification has been made at this station and operated for four months on the air. Reports have been good.

The original circuit is a Clapp oscillator using a 6AU6 tube with two separate oscillator coils, covering the ranges of 1750-2000, 7000-7425 kc. and 6740-6807.5 kcs. Separate padder capacitors are used to set the low edges of the bands, and a slug in each coil sets the high frequency end of the bands. Calibration on all five bands 3.5-7.0-140.0-21.1-28.0 mcs) took less than one hour total using the SX-88 receiver's 100 kc. crystal.

A seven pin miniature socket was mounted just to the left of the 6AU6 oscillator socket (when viewed from front of transmitter) to be used for the 6AL5 diode modulator tube. The original four terminal strip was moved to clear this new socket. Next the 2.5 mh RF choke was attached to the proper terminals of the socket, and a lead run thru the chassis, long enough to attach to the keying jack. The filament was connected to the 6AU6 filament, and the two .05 mfd capacitors connected to the ground lug of the four terminal strip. Then the 3,000 ohm resistor was mounted across the .05 to ground. All of these leads were kept as short as possible to avoid ground loops. The ground was the plate pin two. A jumper from pins 5 to 7 and a 10 mmfd silver mica connected to pin 7 of the 6AU6 oscillator. This completes the wiring on the VFO itself. Next an insulated closed circuit jack was mounted two inches above and one half inch to the left of the microphone jack. Then a one megohm linear potentiometer

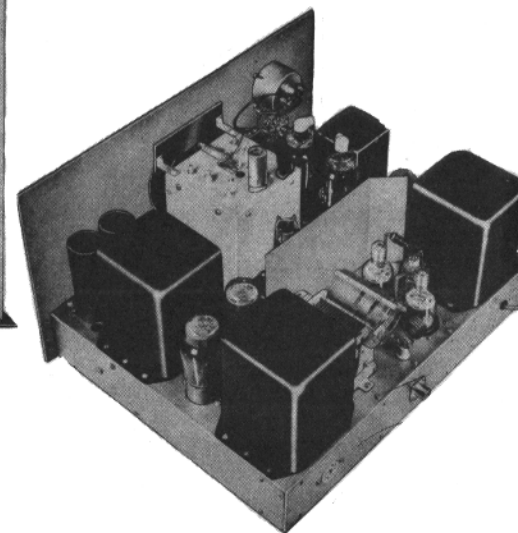
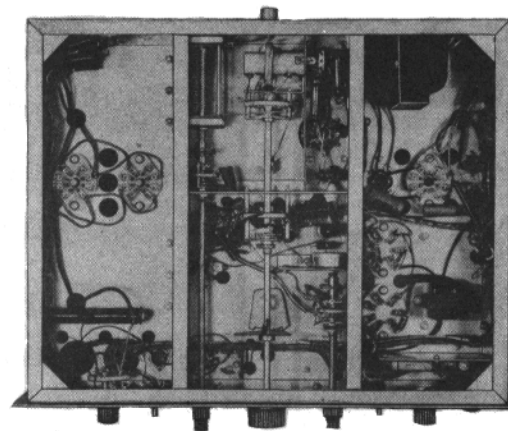
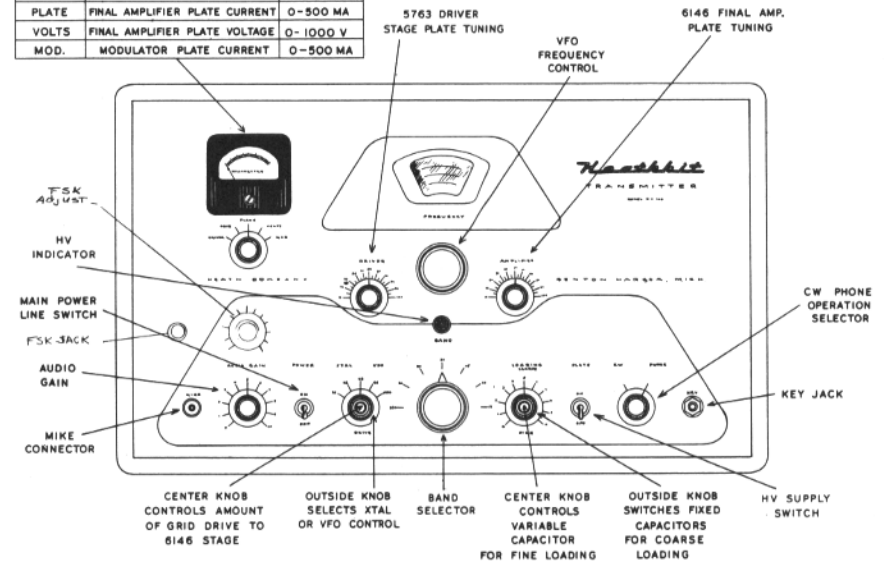
was mounted directly below the meter switch, on line with the keying jack. Next the lead from the 2.5 mh RF choke was connected to the one megohm potentiometer as shown in the diagram on pages eight and nine, and then a 50,000 ohm one watt resistor was connected to the pin 5 of the OA2 voltage regulator tube. This should complete all of the wiring changes.

In setting the amount of frequency shift, one should be careful not to run the potentiometer too far, as the shift will reverse if excessive voltage is applied to the 6AL5 tube. When correct amount of shift has been determined for the 3.620 kc frequency, you will find that changing to forty meters will give about the correct shift with very little adjustment. However when changing to twenty meters it will be necessary to reduce the voltage or amount of control to cut the shift in half. ie; 425 cps on forty VFO to allow 850 output from the 12BY7 doubler. The amount of shift on the VFO also has to be reduced on fifteen and ten meters. In other words, the VFO operates on the fundamental on 3.5 and 7.0 but is multiplied for output on twenty, fifteen and ten meters. Mounting the 6AL5 tube above the VFO chassis keeps the heat outside of the coil and capacitor compartment. Stability seems very good.

A more complete description of the operation of this circuit will be found in the April 1953 RTTY, by W6ZH. Another adaption of this same circuit will be found in the June 1954 RTTY. The circuit is quite easy to install and get operating. And last but not least it keys right side down. Many of the circuits used in the past have FSK'd fine but produced inverted keying. Polar relays can be used to correct this, but add potential distortion.

Diagram on Pages 8 and 9

METER SWITCH POS.	MEASURES	RANGE OF READING
DRIVER	DRIVER PLATE CURRENT	0-50 MA
GRID	FINAL AMPLIFIER GRID CURRENT	0-10 MA
PLATE	FINAL AMPLIFIER PLATE CURRENT	0-500 MA
VOLTS	FINAL AMPLIFIER PLATE VOLTAGE	0-1000 V
MOD.	MODULATOR PLATE CURRENT	0-500 MA





Am still hoping to try and feed my AFSK oscillator into my 20A SSB exciter (yes, I have a sharp cutoff low pass filter in the 20A) wonder if any of the boys have tried this? Would like to read some comments on this.

—73 AI W2CFT

RYRYRYRYRY

In a recent QSO with Don Mix, W1TS, he referred me to you for the above information. (RTTY) Do you have a publication to which I may subscribe?

—W3NEP

RYRYRYRYRY

Would like to be informed as to the happenings of RTTY—I have been in operation for about eight months with a model 12 printer. Up to now only on two meters for CD use. Can't seem to find the time for luxury operating, but will soon.

—73 W2IRT

RYRYRYRYRY

Wade (W7HRC) is going to Chicago for six months about October on loan to Western Electric from Ma Bell so he will be off the air as he is now. No antenna. Power company cut him down, Hi.

—73 W7CO

RYRYRYRYRY

Apologies are in order on the last communication you had with W6YM . . . Fire drill and the operator had to leave suddenly and you were gone when he got back. Hi. That's one of the little difficulties at school.

—73 W6BNB

Attended the last meeting of the RTTY Club at AEE's QTH last month. Met a swell bunch of guys and came home thinking a little better of the piddlie-piddlie boys. Seems they have their troubles too. Tnx fer a swell time and for the papers Merrill.

—73 es CUL Corky W6ORS
(West Coast Ham Ads)

RYRYRYRYRYRY

Thanks for the invite to break and join with you. However, I am in the process of building my transmitter and probably won't have it done for 2 or 3 weeks yet. It will be VFO or Xtal with PP 807 output with FSK on the VFO. I had a rock bound 6146 and figured it would be too much trouble to rebuild for RTTY, so I sold it and am building this new one . . .

—73 John W7KQX

Gang, don't wait until your xmtr is FSKING, if you are copying, break in on CW as there are lots of good RTTY men who copy A-1. Ed.

RYRYRYRYRYRY

The June issue of RTTY is full of information. The AFC looks good . . . may try it soon. My station has been off the air since I sold the AT-1 but hope to have the DX-100 on in a few weeks.

—73 W4ZPZ

RYRYRYRYRY

I have been quite busy here, wedding for my daughter and very busy at plant, plus terrible hot weather. The Teletype is still all in running condition but no time.

—73 W8IJV



. . . Apparently 25 of us on counting NCS was remarkable considering my distance from group. (Average 100 miles) and power (BC522-15 watts). Certainly appreciated assistance from W6CAP and W6ZBV altho it turned out we heard everyone except W6EGZ. de W6CK.

* * * *

. . . W9TCJ de W8DVL, Parma Hts, Ohio. Well, Well. Good evening Bob. Long time no see. Sure glad to hear you again. You are putting a nice sig in here but the QRM is giving you good competition. Think will manage good to perfect copy tho. Haven't been on too much here and for past few days have been looking for some gremlins in XMTR and just got back on the evening with things looking a little better. How are things going with you and what is new with the RTTY gang. W9TCJ de W8DVL Parma Hts, Ohio KK

* * * *

. . . W1FGL de W2PBG Bayside, LI, NY. Good evening Al and thanks for the call . . . Boy is it raining here as it has been for the last twenty four hours here. Over seven inches of the stuff so far in the period. What is all the news there Al and has the bad WX started to hit you yet? So over to you. W1FGL de W2PBG, Bayside, LI, NY. AR KK

. . . W5TJE de W5RJG. Roger and fine Buck. Well sure hope you get the new XTR to going as you like it. I sure am partial to PI network plate ckts. Not much change over here since our conversation on fone last night. Only thing I did today was work in the yard and also went down and worked on the PA system at the church house. I been pretty frustrated all day today. Nothing went like I would have liked for it to. Sometimes I'm tempted to quit this mess. Boy if a psychology teacher were to get a hold of me today he would have a solid of bundle of frustrations caused by various and sundry barriers. It's sometimes commonly referred to as a variety of discoloration around the posterior regions of the torso. Am tempted to go in debt deep enough to buy a heathkit XMTR and receiver. Set em up on top of the chest of drawers in the bedroom and let the rest of the world go by. Griped long enough wt way. What say. W5TJE de W5RJG KK

* * * *

. . . W5TJE.. de.. W5JBW.. near.. Lake Charles, La. Good evening Buck and thanks for the call we were trying the rig out here and have some friends in the shack. We have Jack who was over at Marvins in Fort Worth and Jerry W2KTB who is stationed at the Air Base out here. Pardon the slow and sloppy typing, BQT this is Jerry on the keyboard right now and this is the first time I've tried my hand at this sort of business. RYRYRY By the way Amos would like to know if you notice our signay jumping around. W5TJE de W5JBM.

* * * *

. . . Glad that you heard me and will let you go now. W6AEE de WØFOW Des Moines, Iowa. AR KK

* * * *

. . . Heard you tell someone that you were licking stamps a few minutes ago. Hi Hi. So won't hold you. W6AEE de W8DVL, Parma Hts, Ohio.

... W5JBW, Lake Charles this is W5-TJE in Dallas. Good evening fellows. and Amos I have been looking for you for two days now. Sure glad to hear you on and your signal is the usual "Loud" over here in Dallas tonight. Well Jerry on the typing I can't talk not after the way I bash this thing with my fist. Hi Hi. It has been years since I used a TTY and the speed and stuff is very slowly coming back. Well on the signal—I do not notice any jump. Just a slow drift up in frequency and I had to keep my hand on the dial on the RCVR to keep it in tune. I would like to switch over to the Collins and see if you can print the powerful 15 watter over there and see how it works. Print clean etc like that there Hi Hi. I think I have it finished now. And was it a job. TVI shift swinging off and etc. Believe it is all OK now and maybe in another month or two the kilowatt should be on the air. Then look out Hi Hi. Back over to you Amos, Jack, Jerry. W5JBW de W5TJE KK

GANG: SAVE THE 29th AND 30th OCTOBER 1955, FOR THE RTTY SS CONTEST. GET THE FSK, PRINTER AND TU ALL CLEANED UP FOR A BIG CONTEST. DETAILS IN THE SEPTEMBER ISSUE.

... Just got the picture printed I took when I was down there. Couldn't make out what was apparently a stained glass window with the NOEL at the top until I saw the printer below it, at the same time I took you. It made me think that it was that RTTY XMAS greeting hanging on the wall. W6VPC.

W6AEE and W5JBW and W6MTJ and W3MHD de W9OCV Western Springs, Ill., near Chicago. "How's this for a first evening on RTTY? Ed."

... Well Buck, guess we had better scram pretty soon. The other fellows want to get back to my place so we can have ice cream and then they want to go home. Right now they are looking over the model 11, 12. The old machine that is standing in the corner. Am now using a model 26 here. Hi. So Buck, I guess I will say 73. and W9UAU, WØBP pass their 73's to you too. Sure glad you came on. Band seems quiet this afternoon. W5TJE de W9TCJ, Williams Bay, Wis.

... W4VHN de W5TJE in Dallas, Tex. OK and TNX for the call. You have a good signal here in Dallas tonight. However there is some fading and I am quite sure that you will find it on me also. The name is Buck. We are running 100 watts to a vertical antenna. Transmitter is a Viking I. The receiver is a Collins 75A2 and the TU is a modified Gates job. The TTY is a model 26. The name once again is Buck. How are we doing into Savannah, Ga. tonight. W4VHN de W5TJE in Dallas, Texas KK

... W5TJE de W4VHN in Savannah, Ga. The name here is Ed. Thanks Buck for the fine report there in Dallas. The band conditions still are not too good tonight but we are having very little trouble fading on you here. Your watts to that vertical are doing a FB job here. OK on the Collins and the Viking that is a nice setup. We are running 500 watts to a 250 in the final and the receiver is the same as yours. A Collins 75A2. Guess we have held to long. We are new comers on this RTTY and I guess we get carried away with it Hi Hi. Here she comes Buck W5TJE de W4VHN AR KK

CORRECTION

JUNE, 1955 — PAGE 3

There should be an RF CHOKE inserted between the Plate of the 6AL5 and the 47K RESISTOR.

S O R R Y !

Traffic Net News

By EMILE DUVAL, W6FLW

The RTTY Society of Southern California Net operates every Tuesday evening at 8:00 p. m. on 147.85 mc.

ACTIVITY FOR MONTH OF JULY, 1955

July 5 — W6FLW, NC — 23 Checkins

W6AEE	W6FNW
W6AFX	W6IZJ
K6BTK	W6JAU
W6BPG	W6LDG
W6BWQ	W6NWM
W6CAP	W6RCM
W6CK	W6SCK
W6CKS	W6SCQ
W6CMQ	W6TLO
W6CZ	W6VAD
W6DEO	W6ZBV
W6FLW	

July 12 — W6CK, NC — 25 Checkins

W6AEE	W6KMT
W6AFX	W6LDG
K6BTK	W6MWM
W6CAP	W6RCM
W6CK	W6SCQ
W6CKS	W6TLO
W6CMQ	W6TZA
W6CZ	W6VAD
W6EGZ	W6VIH
W6FLW	W6ZBV
W6IZJ	W6SCK
W6JAU	W6BPG
W6JFZ	

July 26 — W6CMQ, NC — 22 Checkins

W6AEE	W6IZJ
K6BTK	W6JFZ
W6BPG	W6LDG
W6BWA	W6KMT
W6CAP	W6NAT
W6CHU	W6NWM
W6CMQ	W6NAT
W6OND	W6SCQ
W6CZ	W6VAD
W6EGZ	W6VIH
W6EV	W6ZBV
W6FLW	

July 19 — W6CMQ, NC — 18 Checkins

W6AEE	W6EGZ
W6K6BTK	W6JAU
W6BPG	W6JFZ
W6BWQ	W6LDG
W6CAP	W6NAT
W6CK	W6NWM
W6CND	W6SCQ
W6CZ	W6WYH
W6DYB	W6CMQ

East Coast Traffic Net

The East Coast RTNET meets regularly on Wednesdays at 8:00 p. m. on 3620 kcs. At present approximately twelve to fifteen have been checking in and taking part in the handling of traffic.

The Mid Western RTNET also meets on Wednesday at 7:00 p. m. on 3630 kcs. from information received by RTTY. 10 to 15 stations have reported in during the last few weeks.

Arrangements have been made between W3PYW and W9TCJ to take care of any traffic originating in either RTNET with destination in the other RTNET. In half an hour after start of RTNET work, contact will be made between W3PYW and W9TCJ in respect to traffic on hand and then will relay on any traffic afterwards into their respective RTNETS.

Suggestions and ideas will be greatly appreciated and adopted if found worthwhile towards improvement of RTNET work.

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For Information Regarding the Society Contact the Following:

W6CLW—Ed Simmons
W6AEE—Merrill Swan
W6SCQ—Lewis Rogerson

For Traffic Net Information:
W6FLW W6IZJ

For "RTTY" Information:
W6CL W6DEO W6AEE