



## Amateur Teleactivities - San Francisco Bay Area

BY VIRGINIA UNSWORTH, W6LFR

The San Francisco Bay Area teletype gang met for dinner August 24, 1955 with 42 in attendance; the purpose was to get better acquainted and to consider forming a Northern California teletype group. Among those present were Merrill Swan, W6AEE and his XYL, Margaret. Merrill and RTTY need no explanation. Also present were telefanatics from Oxnard, San Jose and Massachusetts.

Bartenders W6AHH and W6GYG dispensed an ample supply of before-dinner refreshments and the chatter was strictly from teletype.

During the course of the excellent dinner Buck Buchanan announced that there would be a drawing for a set of Gates filters. A hum of anticipation swept thru the crowd. Buck introduced Merrill Swan who announced that there will be a number of 26's available at various spots throughout the U. S. Merrill also read the petition ARRL has submitted to the FCC whereby it recommends approval of shifts from 900 cps down. Particular mention was made of 170 cycle shift which has been agreed upon tentatively among those who are in a position to know of the advantages of this frequency and it is hoped that this approval from the FCC will come thru shortly. This new proposal will give more space for the low frequency operation of radio teletype due to the fact that it will take up a narrower spectrum space while allowing sharper receivers to operate satisfactorily and transmission will take up less frequency space, enabling more stations to occupy the limited area in which teletype stations can operate.

Merrill commented briefly on the use of two meter teletype and the part tele-

type can play in C. D., etc. He displayed a selector of a type used on Models 14, 15 and 26 and described the function of this unit. Also, mention was made that parts for the various machines obtained through RTTY can be procured from Louie Rogerson, W6SCQ, for the price of the postage—if the part is available there. It was pointed out that it is necessary to provide adequate information such as part number or accurate description of the part.

Buck asked if anyone wanted to investigate the forming of a Northern group under RTTY and the vote was unanimous in favor of obtaining more information about this matter.

Cliff Nichols agreed to read the So. California group's charter and will contact all interested parties in the near future.

Roger Bunce discussed the FSK converter and gave to all interested a schematic and hints on constructing the unit.

Copies of the interesting talk given by Roger Wixson at a previous meeting in Oakland were made available to those who wanted them.

Merrill discussed the Gates filters and mentioned where they could be obtained. The drawing was held and the filters went to W6CJY, who gave the group a charge when he said he had ordered a set of filters months ago but Gates went off on a Uranium hunt and Jack was still waiting for his filters!

Several photographers were present and from the flashes being seen there

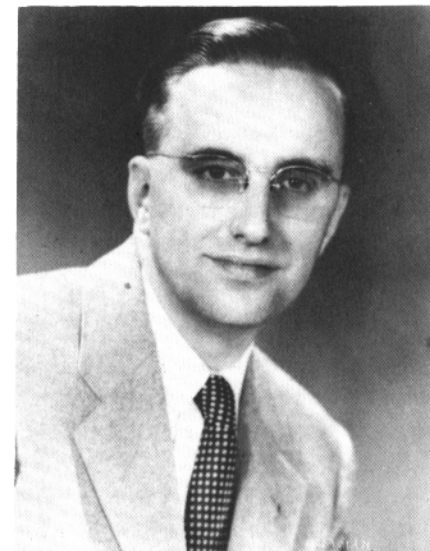
should be a number of interesting pictures resulting.

Even tho there was a very representative crowd of teletype enthusiasts there were a number who were unable to make the dinner due to previous commitments or work schedules. Among these were W6FSL and W6CBF and his XYL.

The meeting was adjourned at 9:20 p. m. and the last of the stragglers talked themselves out by 11:00. The group anticipates getting together again in the near future.

Merrill Swan and XYL, Margaret .....	W6AEE
Buck Buchanan and XYL, Maribel ....	W6VPC
Erv Rasmussen .....	W6YPM
Pete Hoover .....	W6APW
Walter Buckley .....	W6GGC
William Nakahara .....	W6GHI
Frank Johnson .....	W6JWF
Archie Waring .....	W6ACN
M. J. Lush .....	W1JUR
Guy Black .....	W6RLB
Al Engstrom .....	W6MKT
Roger Wixson .....	W6FDJ
Harold Gavello and XYL .....	W6ZSS
Corwin Henry and XYL, Ruth .....	K6DX
Chas. Elvin and XYL, Irene .....	W6ASJ
Wayne Abern .....	W6PYM
Andrew Detsch .....	W6GCV
Peggy Detsch .....	W6PCN
Fred Heward .....	K6EER
Jesse Fraga and XYL, Jewel .....	W6DNX
Bob Unsworth .....	W6MTJ
Gin Unsworth .....	W6LFF
Wayne Magnani .....	W6WSE
Jim Hall .....	W6GYG
Bob Brown and XYL, Myrtle .....	W6AHH
Jim Sadler and XYL .....	W6SFW
Cliff Nichols .....	W6FZC
Roger Bunce .....	W6EFT
Emery Simpson .....	W6FXA
Dorothy Shrader .....	W6ECU
Bob Shrader .....	W6BNB
H. L. Graham .....	W6NKP
Wm. Nichols .....	W6VVP
Jack Vogelmann .....	W6CJY

## BYRON KERTZMAN W2JTP



This is by way of introduction to the "Reporter for CQ" on matters RTTY wise. Byron was first licensed in 1936, with his present call. Soon afterwards he took his Commercial Telephone First and Commercial Telegraph Second. Served in the Signal Corps where he taught RTTY at Fort Monmouth and later at Yokohama. Graduated from the University of Vermont with degree of E. E. He was on the engineering staff of the "Voice of America" and is currently Assistant Chief Engineer at the ERCO Radio Laboratories in Garden City, N.Y.

Operates on two meters from his home in Howard Beach on Long Island. His printer is a model 12 and a model 21-A. Hopes to get on low frequencies soon to join the gang.

RTTY wishes to express thanks for the swell job he is doing.

## RTTY SWEEPSTAKES CONTEST OCTOBER 29, 1955

The Second Annual RTTY SS contest will be held over Saturday, the 29th of October, 1955. Starting time will be 0300 EST, 0200 CST, 0100 MST or 0000 PST of the 29th. Closing times are 0300 EST and so on. Rules are the same as those employed for the Anniversary SS contest in February this year. See the January 1955 RTTY Bulletin page two for details.

Reports should be in not later than the 15th of November in order to be counted for this contest. Certificates will be given to the highest score in each ARRL Section. Provided there are more than three contestants in each Section. Exceptions may be made at the discretion of the Contest Committee.

Your contest log may be made in any manner, however a suggested form will be found in the January 1955 RTTY or QST page 49 of November, 1954.

Your attention is called to the additional points for working the same or other stations on additional bands. Areas in which two meters is active RTTY wise, offer the opportunity for additional points. This is your contest which you have been asking for, so lets try and make it a good one.

## ON THE COVER

Photograph of Jr. Operator at W9, LDH, Spencer Scope, Racine, Wisconsin.

He says: "He is just about two years old. I know that is quite young to start them in on RTTY but we badly need operators on the low frequencies in the midwest and so—have been trying to figure out how he can pass his code test in view of the fact that he can't write. As a matter of fact he doesn't talk but he sure does like to turn the dials. When I find the final that draws normally 200 ma. jumping to 350 ma. when the transmitter is turned on for an evening of hamming, I know the Jr. op has been tuning the dials."

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## CORRECTION TO DRAWING on Page 6, August 1955 RTTY Bulletin

In a letter from W6MTJ, he comments as follows: "I made an error in the diagram which I sent you, the lead which runs from the right hand side of the 1-A tape head to the left hand side of the 'contacts on 26' should be changed as follows; The right hand lead should connect to the lower set of contacts on the 'CRL' switch. Note that all references are made to the diagram and not to the actual position of the contacts in the 1-A tape head or the 26 contacts."

—73, Bob, W6MTJ

## AN FSK CONVERTER

BY ROGER BUNCE, W6EFT, Robert Dollar Company

The attached schematics illustrate a converter patterned after one described in May 1955 RTTY by W6LDG. This is presented with the thought that the writer's experiences with tuning up the converter and obtaining first class performance may help others facing the same task.

The attractive feature of the circuit (pages 8-9) is that impedance coupling using low Q coils is utilized in place of toroids. A great deal of credit is due W6LDG for reminding us of the well known fact that adding stages in cascade increases the skirt selectivity of the tuned circuits, ala an IF amplifier.

The inductors used in the converter under discussion are approximately .5 henry and the 2125 cycle coils are tuned with an .01 and .002 capacitor in parallel. The 2975 cps inductors each required a total of .008 mfd. The measured discrimination, desired signal to the unoccupied channel is better than 30 db.

When building this converter care should be taken in tuning up the "front end." It is suggested that this portion up to and including the 6AL5 rectifier be wired and adjusted first. An audio signal generator capable of providing equal output at the 2125 and 2975 cps. points is required. Output for test and tuneup purposes should be measured across each diode load resistor to ground. A VTVM is excellent for this purpose. It is important that both sets of tuned circuits in the 2125 cps channel peak

precisely at this frequency. Similarly, both sets of tuned circuits in the 2975 cps side must resonate at the same point.. Tuning is a matter of selecting the proper padder capacitors shunting the inductors.

An audio oscillator of fairly wide range is helpful in first determining where L-1, C-1 resonate. With the starting point located, it is a simple but fairly tedious job to align the LC combinations.

A scope can be used as a resonance indicator with excellent results. Use either the vertical or horizontal input, sweep off, and note that resonance will be indicated when the "longest" straight line is obtained. Using a scope has the advantage that the LC circuit under test is not loaded by the measuring instrument.

During the tuning up process shift the scope back and forth between 2 (grid) of the input 12AX7 and the scope jack to make certain that both inductances with their associated capacitors are peaking together. Upon completion, substantially the same voltage should be obtained from point X to ground as is obtained from point Y to ground. However, a variation of 10% will have no noticeable affect upon performance of the converter.

Although not yet tried, filter chokes of the 20 henry type with the iron core removed should work in this circuit. Core laminations may be replaced a few at a

time, if the frequency is initially found to be too high. The beauty of the cascade arrangement is that coils with very low  $Q$  may be utilized merely by adding another 12AX7 stage ahead of the one shown.

In the converter described, actual voltages obtained across the diode load resistors were ten volts to .3 volts to ground. Explaining this, with signal in the 2125 cps section only, the voltage read between point Y and ground was 10 volts. Shifting the VTVM to the X point but without changing signal input resulted in a reading of .3 volts to ground. Input from the receiver was approximately 25 milliwatts and the one tube limiter was used between the receiver and the converter.

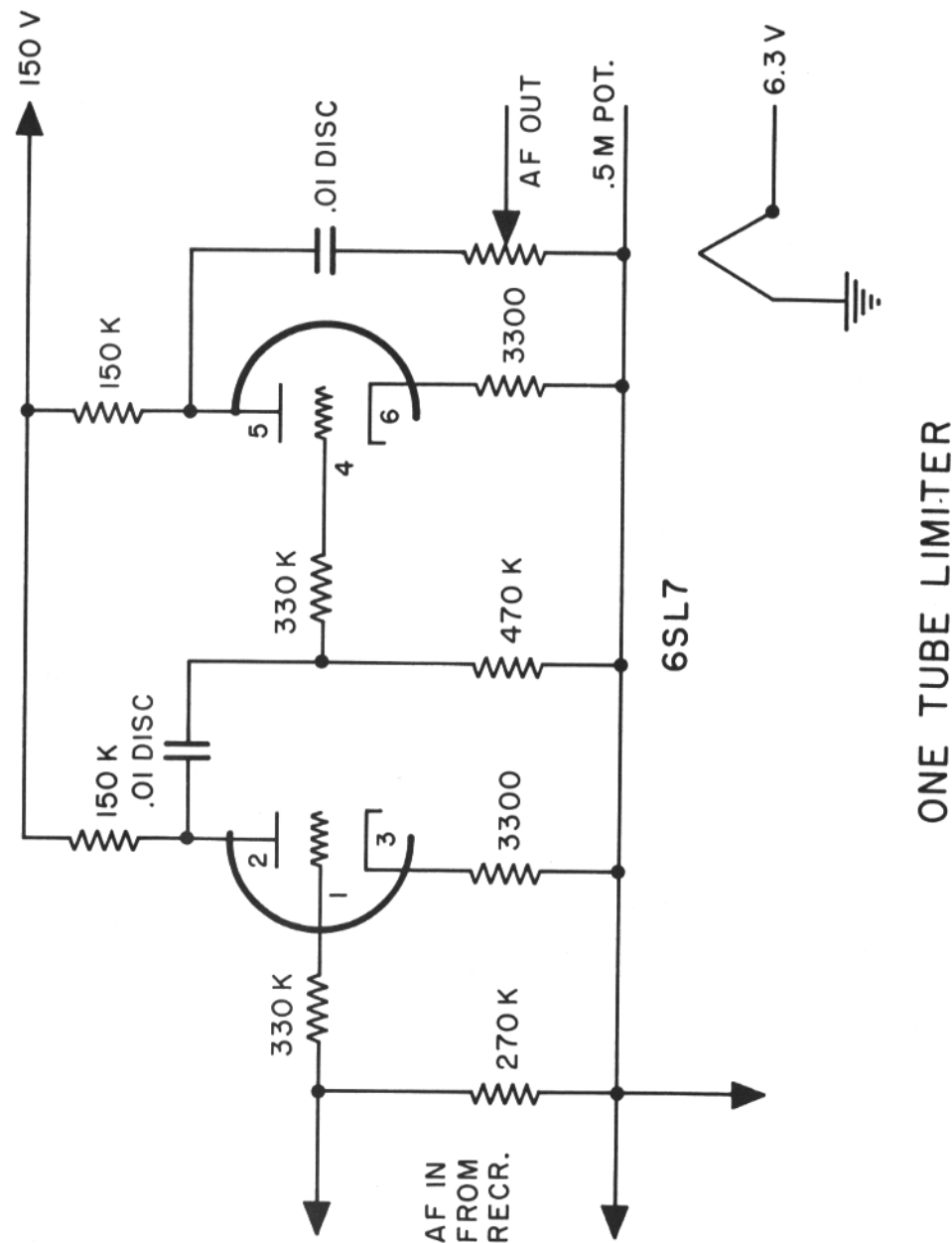
With the input section complete and tuned, it was found desirable to substitute potentiometers for the cathode and plate resistors of the clipper tube (half 12AX7) and the values of 82 ohms in the cathode and 150K ohms as a plate load resistor were ascertained in this manner. Final determination of these values was made by alternately shorting out the mark and then the space section of the converter to obtain printing from one side alone. This can most conveniently be done by inserting a shorted phone plug into the scope jack. The coupling capacitors are quite critical and should not be "leakers." The capacitors can be checked for leakage by placing one side of the capacitor on the 150 volt supply and reading positive voltage, if any, between the other side and ground. An inductive voltage kick will be obtained, of course, from a good capacitor but no sustained voltage reading should be obtained.

The values shown should work. A .1 capacitor was initially used between the rectifier output and the clipper tube but it was found that the teletype printed an "O" instead of a "T." Examination of the teletype code showed that the converter was dropping a pulse and changing the capacitor to a .25 mfd. cured the trouble.

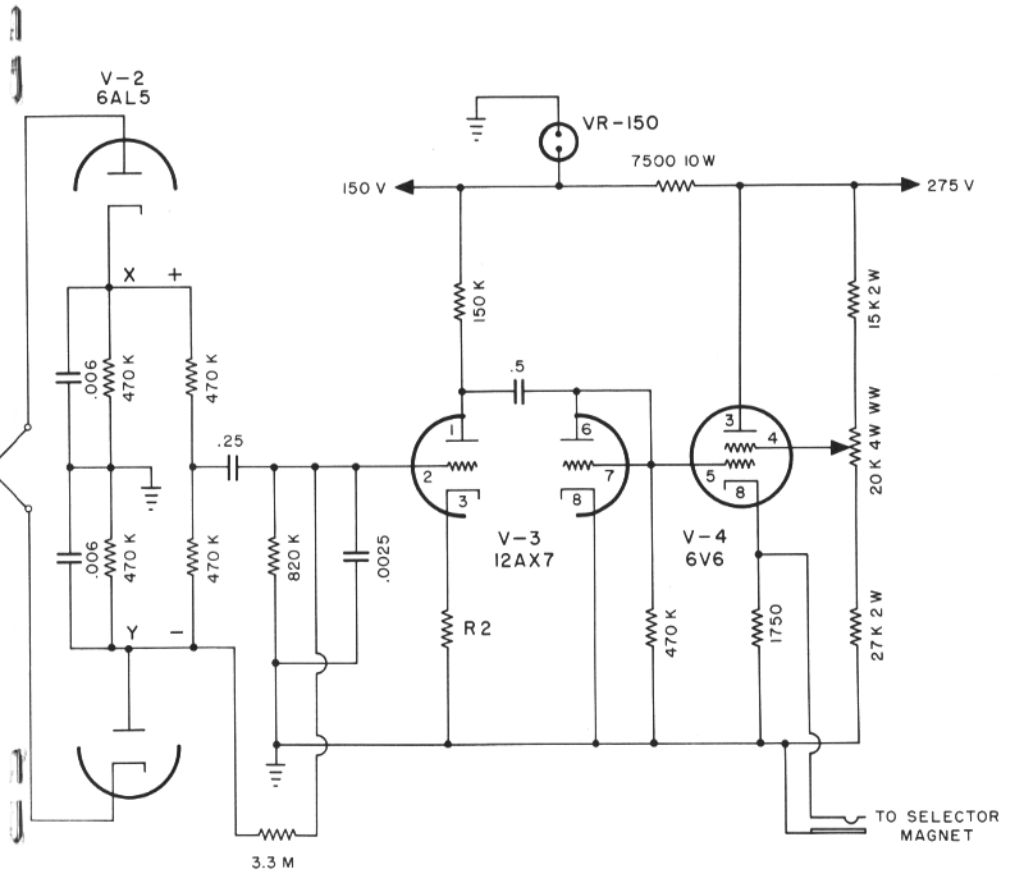
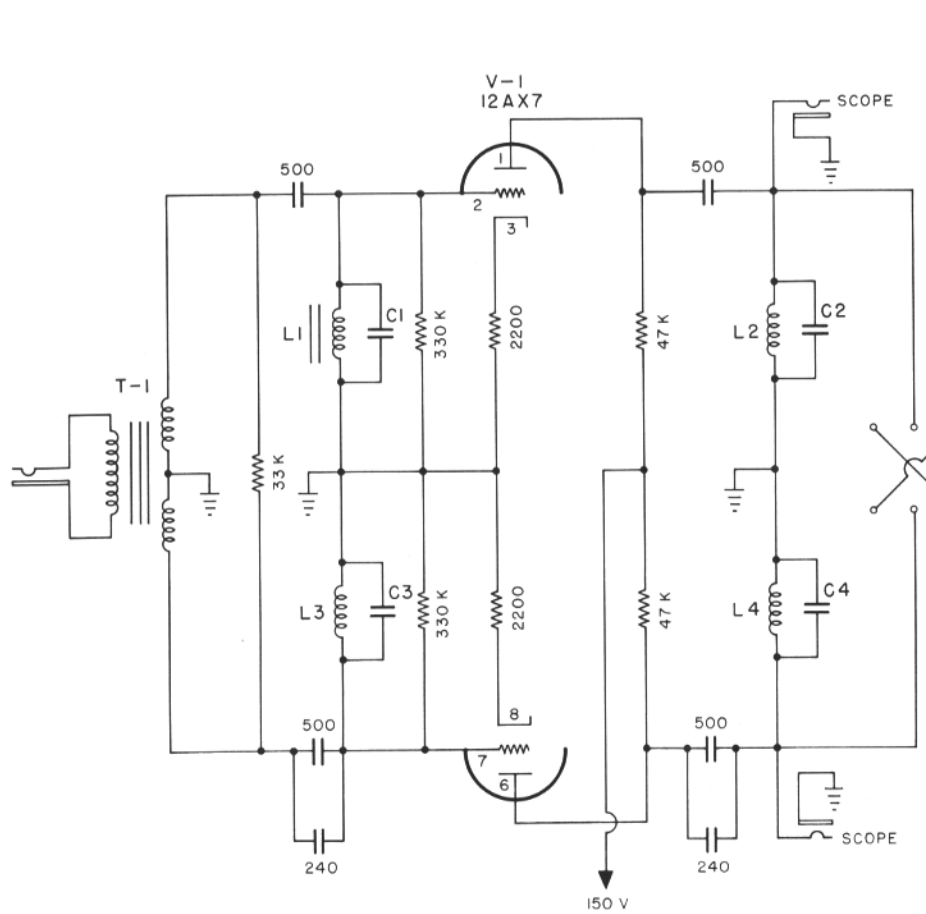
The second half of the 12AX7 is used as a clamper to insure only negative keying pulses reaching the grid of the keyer stage.

Operation of the keyer stage warrants some explanation. It is highly desirable to obtain screen voltage for the 6V6 from a potentiometer. This permits establishing the operating point of the tube in relation to the negative voltage applied to the grid. With the printer selector magnets in series it was found that best operation, in this case, was obtained with approximately 27 milliamperes of current through the selector magnet. This is very close to the prescribed 30 ma. However, teletypes will vary in a easure dependent upon the spring tension of the magnet armature and allied factors. For these reasons, the potentiometer permits the desired control.

The writer's experiences with the converter—over about two months, showed up the advantages of using a limiter ahead of the converter. It is true that the operation of the clipper stage is of a diversity nature, however, the extent of fading of an FSK signal is hard to believe until seen on a scope. The rapid fading experienced on even local, high powered stations, presents widely varying voltages to the clipper and thence to



ONE TUBE LIMITER



the keyer stage. It is also true that connecting a high gain limiter ahead of the converter will present a high noise level to the unit which will cause continuous mis-printing of the teletype while tuning around for signals. The answer, to my satisfaction, was placing a gain control between the limiter and the converter input. This permits operating the limiter at a sufficiently high level to provide saturation at all times yet permits taking off only the minimum signal required for operation of the converter. It permits establishing a uniform level of negative keying voltage at the keyer grid and thus makes adjustment of the selector magnet current very easy and straightforward.

The procedure is to turn the receiver away from any signal and to inject noise alone at converter input. Then, adjust the limiter output control until the selector magnet will not be actuated by the noise pulses. If the scope is watched as this is done it may be surprising to note how the scope "picture" cleans up. The operating point of the converter, when located in this manner, is thus fixed and may be left alone.

It was also noticed that while the output of the limiter may consist of square waves as a result of the heavy clipping that the tuned circuits of the converter restored the wave shape to a sine wave. This "rounding up" action is most pronounced, of course, at exact resonance but the overall action of the tuned circuits in this respect is highly desirable.

The limiter also aids in tuning since signals of fixed amplitude reach the scope. Nothing, of course, including a

limiter, will help when both space and mark signals fade well below the noise level and the scope traces become a blur without distinguishable outlines.

A circuit of a very simple one tube limited is included here. This performs excellently and is easy to make. It can be incorporated in the converter or made up as an outboard unit. Phone jacks for input connectors provide a ready means for cutting the limiter in and out of the system to determine its advantages.

The input transformer used happened to be a Triad A31X—10,000 ohm primary to 90,000 ohms secondary (two grids). Any plate to p p grids audio transformer will work here.

The circuit (page 7) of a two-stage, one tube limiter, provides essentially constant output with an input signal which varies from approximately minus 10 db to plus 20 db.

Of particular importance is the output potentiometer which permits adjusting the input to the converter below the point where noise alone causes actuation of the selector magnet. Procedure is: Tune the receiver to noise and run the audio level well up—then adjust the output potentiometer until noise will no longer trigger the teletype selector magnet. Tuning in to a frequency shifting signal should permit normal operation of the printer without excessive noise. Note how the scope picture clears up as you reduce the signal level to the converter.

The entire limiter circuit can be constructed on a single turret socket.

## 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 AUGUST, 1955

August 2—W6IZJ, N. C.—19 Checkins

W6AEE	W6EGZ
W6AFX	W6EV
W6BPG	W6FLW
K6BTK	W6IZJ
W6CAP	W6JAU
K6CHU	W6LDG
W6CKS	W6NWM
W6CMQ	W6SCK
W6CZ	W6SCQ
W6DYB	

Excused: W6CRM, WNZBV

August 9—W6SCK, N. C.—24 Checkins

AUG 9	W6BWQ
W6AFX	W6BPG
W6RCM	W6DNJ
W6CMQ	W6CZ
W6EV	W6DYB
W6JFZ	W6FLW
W6IZJ	W6CKS
W6JAU	W6SCK
W6KMT	W6EGZ
W6LDG	W6CAP
W6SCQ	W6CND
W6ZBV	K6BWJ

August 16—W6RCM, N. C.—19 Checkins

W6AEE	W6FNW
W6AFX	W6IZJ
W6BPG	W6JAU
W6CAP	W6LDG
W6CND	W6NWM
W6CZ	W6RCM
W6DYB	W6SCQ
W6EGZ	W6VAD
W6EV	W6ZBV
W6FLW	

August 24—W6AFX, N. C.—20 Checkins

W6AEE	W6FLW
W6AFX	W6IZJ
W6BPG	W6JAU
K6BPI	W6RCM
K6CHU	W6SCQ
W6CK	W6NWM
W6CMQ	W6DNJ
W6CND	W6PSW
W6EGZ	W6VAD
W6EV	W6CZ

August 30—W6BPG, N. C.—16 Checkins

W6AEE	W6EV
K6CHU	W6FLW
W6CKS	W6IZJ
W6CMQ	W6JAU
W6CND	W6LDG
W6CZ	W6RL
W6DYB	W6TLI
W6EGZ	W6ZBV

Excused: W6RCM, W6SCQ

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## Mars Net News

E. C. (Buck) Buchanan, W6VPC  
Oakland, Calif.

The first Mars Net in the Sixth Army on the 80 meter band was activated as the A-6VPC/A net operating at 0200Z. Thursday or in plain language 7:00 PDST each Wednesday evening.

Authorization was given for operation on 3275KC with F-1, A-1 and A-3, primarily the intention is to operate the net with RTTY Mars stations.

The first drill was held May 4th with the following participating; A-6VPC, NCS, A-6ASJ, A-6FZC and A-6WAP.

Now we have the following members on this net, A-6VPC, NCS, A-6MSG, ANCS, A-6ASJ, AA-6EAD, A-6FDJ, A-6FLW, A-6FZC, A-6MZO, AA-6WAP. With applications pending from A-6ZSS, A-6ZNU and several others.

With increased activity it is planned to activate additional nets according to the time and date available and which would be most acceptable to the participating members. Mars Director Sixth Army has several other available frequencies on the 80, 40 and 20 meter bands as well as intermediate frequencies in vicinity of 5 and 6 megs.

We would be pleased to have any Mars members or prospective Mars member interested in joining or forming an RTTY net drop a line to Mars Director, Sixth Army Presidio of San Francisco for application blanks and request for assignment, if already Mars member.





## TAPE OFF THE FLOOR

Saturday afternoon I unloaded the idea on WØOCV, Bert, who has a Model 28, borrowed from Teletype Corp. and W9 BGC, Joe, both in or near Chicago. I also pointed out that with Teletype Corp. and Kleinschmidt factories in Chicago it was a natural as the center of the Teletype world. I thought trips might be arranged to visit the plants to see machines assembled and tested. I also spoke of you having lots of interesting things to demonstrate, and that I could prepare advance magnetic tapes to test terminal units anyone wanted to bring, even run a contest for best printing with the tape simulating various degrees of increasing noise, CW interference crossing through the mark and space frequencies, simulating fading then overloading and simulated selective fading by reduction of either the mark or space in steps. The test would be so difficult no unit would get 100 percent perfect copy, but the best would win.

I pointed out that the time is short for an elaborate program and for much National advance publicity, the Conference being only five weeks away, but the word would be spread fast over the air and on the two meter nets of both coasts. The two Ham publications would probably co-operate with mailing lists and perhaps addressed stickers. At least it appeared possible to find a private dining room where we could get together to eat and have a gab fest. However I know Chicago has the ability to throw some mighty FB Conventions for I took part in a few in 1920-1922 and in 1933 they awarded me a gold medal for short wave development, and I am very grateful. I suggested a Model 28 as a Door prize, which would certainly get publicity and attendance, and Bert did-

. . . . W9TCJ de WØBP, Minneapolis, Minnesota. Bob here is the idea I advanced to you Saturday regarding a proposed RTTY Convention or RTTY Hamfest in Chicago in connection with the 11th Annual National Electronics Conference, October 3, 4 and 5, 1955 which days are Monday through Wednesday. The conference is sponsored by AIEE, IRE, Three Universities in Illinois, Four Universities of nearby States and other Organizations. There will be an exhibition and a large number of papers to be read are listed in the advance program, much resembling the IRE Convention last March in New York City. No doubt several persons will be there that are very much interested in RTTY and others might come for combined RTTY and Electronics Conference.

Unfortunately Ray, Chuck and the other Chicago lads that were to visit you didn't show up Saturday so we did not get a chance to unload the idea on them as to what they thought of an RTTY gabfest. The Electronics Conference has only an AIEE Smoker scheduled for Monday evening, for example . . . .

n't say no. He is going to see what he can work out. Perhaps we might sell raffle tickets and get one at cost for such an affair. Similar gimmicks have been used before.

Joe said he would make a proposition; If I would arrange the speakers program he would guarantee a meeting place. I told him I wanted you in on it too, Bob, but was sure I could count on you. The way we left it was that he was going to get in touch with some of the other ringleaders in Chicago and would write me by Wednesday. I asked him to send you a carbon copy.

I had lunch about five p. m., turned on the receiver later and heard Buck tell Cecil, W9CNN that he was afraid he could not get to the Chicago RTTY Hamfest!! They signed off and I couldn't bust in to get up to date! Later I had a poor contact with Merrill but got the idea over that something was cooking so if RTTY is going to press the next day or so a short note might be in to alert the gang to be on the lookout. He thought it an excellent idea. I have been collecting ideas. I had thought that if some fellows got there a little early, a tour of Chicago stations could be made Sunday afternoon and evening (I remember the spark rig at 9BP, Estey Page, and how I envied his call, same as my initials, back in 1921) But Roy, W2TKO, says he will come but thinks there would be more RTTY hams that could attend from Chicago and nearby states if the hamfest was held on Sunday. He has a point there. Don't know how we could fit in the visits to the Teletype plants on a week end tho. I doubt whether in the time left and the limited numbers we have if too elab-

orate a program should be planned for first try. Joe thot a cocktail hour in late afternoon would be fine, which is OK with me, but the technical meetings had better be over with first. He said the local gang would cooperate fully, furnish printers, tape units, pullers and anything possible so the technical speakers would not have to lug so much. I didnt think of slides and projection machine until later, but that saves time as compared to a blackboard. As few hams build their own receivers, and of course buy their machines, outside of a talk on machine adjustments, I think the main items would be parts of the TU for the technical program. I can demonstrate narrow shift also, and have three types of terminal units and I know you have some things of interest.

So Bob, it looks like the high voltage has been turned on and the sparks will fly, and something is liable to happen. Will know for sure in a few days whether the Chicago boys pick up the ball and decide to meet the challenge!! W9TCJ de WØBP, Minneapolis, Min. AR  
"As received and reperforated at W9TCJ Williams Bay, Wis., Aug. 29, 1955.

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. . . Maybe you can work a RTTY in San Francisco. W6MTJ is his call so listen for him on this frequency or I can QSP. W6AKG/KL7 de W6AEE.

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. . . W6AEE, W5JBW es All de W3-PYW. Ge Amos. You are coming in like the proverbial ton of stuff. Egad. Like a local . . .