

As you all know our financial position is very shaky and therefore we must do something about it. The executive has discussed several different ways to correct the situation and a dance seems to be the best way to raise money. A banquet is nice but as most of you know, they are not money making operations.

The dance will not be strictly for "hams" so you can bring all your "non-ham" friends and have a real good time. John Pluister, VE3FGL and Hank, VE3FHV are heading up the committee. Jack Waytough, VE3GEK volunteered to help and I would like other volunteers to phone Hank or John and volunteer their services. - More about the dance at the next meeting.

Do you have a TVI or BCI problem? Have you ever thought of serving on a TVI committee? After hearing Chris Lyons' talk (VE3GUS) at the last meeting it would be an asset for the club to have a TVI Committee. Even if you don't have a problem, it would be satisfying to know that you have someone to call on for advice.

See you at the next meeting, March 10th.

Lorna Solly, VE3GNO

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ABOUT CAMERAS AND PHOTOGRAPHY

- and that's a mouthful'. So much so that our March meeting will have lots of fascinating subject material for you to chose, on this our first camera-photography night.

Here is a resume of the programme: Two 16mm sound movies. You will see the inside secrets of the world's largest camera plant, for a starter.

First Come - First Serve

From an unbelievable variety of over 60 different booklets, publications, you can pick and choose most any topic to do with photography, cameras, films, etc.

Any booklet without my name on it is free, free, free.

For those of us that like (would like) to take close-ups, but dislike the exposure etc. calculations, bring some tracing paper. I have prepared a Chart - Nomograph to easily calculate, with your flash unit, successful close-up photos.

Sounds like a participatory meet, doesn't it?

Jack, VE3GEK

Meetings The meetings of the North shore Radio Club are held on the second Tuesday of every month at the Thorntons road Cumunity Centre. Visitors are welcome.

Executives

President	Lorna Solly	VE3GNC	668-6013
Past President	Ralph Day	VE3CRK	725-2029
Vice president	Ken Aston	VE3FPD	728-9759
Secratary	Ray Plante	VE3DEN	576-1449
Treasurer	Ron Wragg	VE3AIY	723-4925
Publicity			
	Ray Plante	VE3DEN	576-1449
Flowers&Cards	Ted Brant	VE3ADD	668-3561
Bullitin	Henry Urbanowicz	SWL	668-3723

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FOR SALE

The following equipment was taken from the SARC news.

- Heathkit dx-40 transmitter.....\$30.00
- VFO.....\$10.00
- Gerry Robertsen VE3GNI 755-3490
- Hallicrafters sx 100 receiver.....\$200.00
- Barney Colleck VE3GB 284-1764
- Heathkit dx60
- hg10 vfo
- Hammerlund hq110 receiver
- Drake TR switch
- 813 Linear 500W 80-20 meters
- Gord Hogarth VE3CNA 694-1644
- 621-8320
- Viking Ranger.....\$125.00
- Mike Toneri VE3FGU 699-6401
- 362-6487
- Viking Ranger '1' 160-10 meters.....BEST OFFER
- Les Popelyak VE3ccp 266-9493
- HW-16 with vf-1 VFO and swr bridge.....\$150.00

The following is localy available

- DX40 xmtr with VFO.....\$50.00
- John Crook VE3BNQ 725-1991

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DUES DUES DUES DUES DUES DUES DUES DUES DUES DUES DUES

If your club dues are not paid by the time the next bullitin is supposed to go out you simply will not receive one.

## SOME THOUGHTS ON RTTY

With the recent availability of a number of Model 15 Teletype printers, it would seem expedient to attempt to cultivate some interest in this direction. This article will not be a construction article, but rather one of orientation and techniques.

Station, VE3BHQ went on RTTY for the first time on Aug. 2nd, 1961. Hugh, VE3YE in Oshawa was my first RTTY contact. Apparently RTTY has not been popular in the NSRC, however, Mike, VE3DKW made his debut on Aug. 27, 1961 and I was pleased to be his first contact. Since then VE3CEU, Colin and VE3QG, Harry have all been on RTTY at one time or another. If I have missed anyone please excuse the oversight. Most of the operation in the NSRC has been FSK (frequency shift keying) on 80 meters.

For the uninitiated, in simple terms, a teletype machine is an electric typewriter which is operated by a selector magnet driven by pulses of current or no current from a B.C. circuit called a "loop". In order to transmit the information to the printer it must be coded in some manner to produce the pulses of current (mark) and the no current (space) signals. On a telegraph line this can simply be done by opening and closing a relay in a D.C. circuit feeding the selector magnet. In RTTY it is not that simple since electromagnetic radiation is an A.C. phenomenon. As a result the necessary information may be transmitted in one of two ways. In FSK -the carrier frequency is shifted 850 cycles for wide shift RTTY and 160 cycles for narrow shift RTTY. FSK or FI emission is allowed in all amateur bands although an advanced amateur licence is required on the lower bands.

In A.F.S.K., a steady carrier is transmitted on a single frequency and the carrier is modulated with single frequency sine wave audio signals which are separated by either 850 cycles for wide or 160 cycles for narrow RTTY. The use of A.F.S.K. is allowed on all amateur bands above 6 metres by the holder of any amateur licence.

It is much simpler to transmit FSK than AFSK since all that is required is to shift the frequency of the transmitter V.F.O. by keying a diode and capacitor with a D.C. bias voltage. To transmit AFSK, a rather high quality audio oscillator with output on both the mark and space frequencies is required. This oscillator must then be used to modulate the transmitter carrier, although this should be a simple problem for any person who already owns a phone transmitter, either AM or FM. For FSK the V.F.O. must be extremely stable.

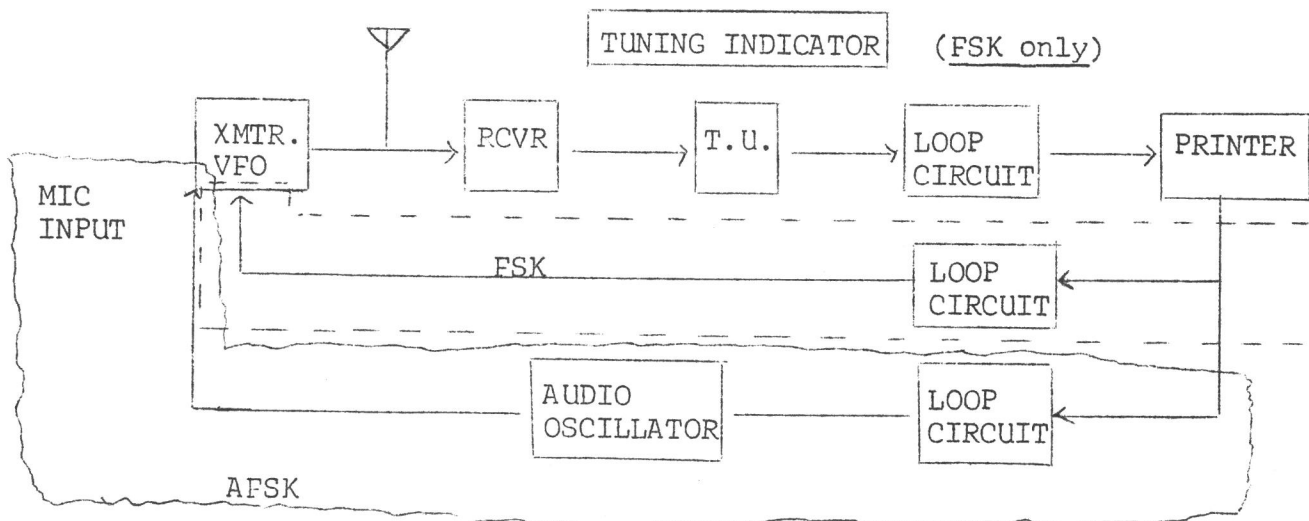
Another way, although less desirable, of achieving FSK is to modulate a good SSB transmitter (one with excellent carrier and sideband suppression) with an audio oscillator as with AFSK. This sideband signals produced then appear as FSK.

The standard mark frequency is 2125 Hy and the standard space frequency is 2975 Hy. These frequencies have been chosen by RTTY engineers for specific reasons. These frequencies result in a minimum of both harmonic and intermodulation products and the beginner in FSK is wise to use these frequencies. On AFSK you will have to use them as these are the standard audio frequencies used for wide shift RTTY.

A converter or "terminal unit" is required between the audio output of the receiver and the printer to convert the audio tones into the pulses of D.C. to operate the printer selector magnet. There have been many T.U. designs and most of the serious RTTY operators have tried several at VE3BHQ. I have built five different terminal units, all with different characteristics. My first effort was an A.C. coupled T.U. which did a splendid job at 60 W.P.M. but would not produce satisfactory copy at slow speeds. After considerable study and rebuilding this became my second T.U. which did a splendid job except it misprinted the first letter of every word following a pause. My next effort was a very simple T.U. which gave good copy as long as the signal was S9+ and no QRM. This of course was unsatisfactory. The next effort was an improvement, however the tuning was extremely critical for this T.U. and it was discarded. My final and current T.U. moved from tubes to transistors which are really in their glory in switching applications such as RTTY. Up until this point I had an impression that transistors were cheap imitations of tubes and not really here to stay, however the operation of this T.U. has provided me with a deep respect for the results which can be obtained from semi conductors properly used. This terminal unit is ridiculously simple and inexpensive and will copy signals which the ear can hardly detect. In addition it handles QRM splendidly, unless of course the interfering signal happens to be right on the mark of space frequency. T.U.'s can be built to copy when one of the signals is completely QRM'ed however the circuitry becomes more complex.

Another factor to be considered is the selector magnet driver. The poorer the voltage regulation, the better the system works since a large voltage causes a sudden surge of current in the magnet winding which draws the armature in rapidly, thus producing good copy. Tubes do not switch rapidly enough to provide good switching. I have found polar relays to be the most satisfactory way to key both the selector magnet and the transmitter V.F.O. I have never tried transistor switching but expect that this would give excellent results. The back E.M.F. from the selector magnet winding produces a respectable voltage transient, thus this should be considered in selecting transistors for this use.

Here is what is required for an RTTY station:



AFSK does not require a tuning indicator.

The most satisfactory tuning indicator consists of a phase shift measuring circuit using an oscilloscope. This can be achieved very simply and will not only indicate actual turnig extremely accurately but will also allow frequency shift measurement as well. This is important in adjusting the transmitter frequency shift for FSK.

Some essential last equipment consists of an oscilloscope, and very accurate audio signal generator or better yet a tuning fork frequency standard or a frequency counter, along with milliameters, voltmeter and the usual test equipment.

The most useful literature is "The New RTTY Handbook" by Byron Kretyman, W2JTP from CQ. There have been many recent articles in all of the radio journals.

In concluding I might say that RTTY has been one of the most interesting and challenging aspects of amateur radio which I have attempted. Try at and have fun.

Farney, VE3BHQ

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Lloyd Kubis, VE3ERQ, Keith Bertley, VE3DHL and Harry, VE3QG can be found operating another mode - RTTY. Dan, VE3CDN should be operational very shortly. The RTTY machines are used in conjunction with their 2 meter FM rigs.

Amateur license plates may be obtained from the R.S.O., P. O. Box 334, Toronto 550, Ont. They are \$1.50 each.

Have you been to the Ontario Science Centre? How about going as a Club (bring your wives along too)? How does the date - Friday, April 3rd fit in with your plans? Think about it and let us know your answer at the next club meeting.

Please cut off and attach to your amendments.

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## Section 2. DUES

The fees for membership shall be due and payable upon admission and shall be renewable on the first MEETING of each year.

### Standing Rules

1. The regular meetings of the North Shore Radio Club are to be held the second Tuesday of each month at 8:15 P.M. at Thornton's Road Community Centre.



MINUTES OF THE FEB. 10, 1970 MEETING OF THE  
N.S.R.C.

Members present: 21

Guests present: 5

Minutes from the January meeting were in the February bulletin and were asked to be accepted by Lorna VE3GNO. Ralph VE3CRK seconded the motion that they be accepted.

Ron Wragg reported that the club had a balance of \$225.88 in the club treasury. The balance was accepted as correct and seconded by John Crook.

Lorna asked the membership if anyone was willing to take the job as field day manager. Ralph day volunteered his services. Members who volunteered to be on the committee were:

Hank Verwoerd	Ted Branch
Jack Waytoff	Milt Graham
Bob Jones	Ron Wragg
Bill Gibson	Ray Plante
Fred Lloyd	

There was a motion by Ralph Day that the N.S.R.C. not assume financial responsibility of the repeater VE3OSH because of financial difficulties forseen by the club executive. This was seconded by Walter Beach and passed.

Since the club was no longer responsible for the financial responsibility of the repeater it was suggested that dues be collected for those members using the repeater. John Plouster volunteered to act as registrar for the repeater. However the F.M. committee felt it would be better if donations would be made for the upkeep of the repeater. Any donations for the repeater are to be mailed to Harry Westwood VE3QG 50 Sherwood Rd., East, Pickering Ont.

The club membership decided to have a dance this year. Hank Verwoerd and John Plouster volunteered to act as chairman for the dance.

In the last half of the meeting Chris Lyons gave a very informative talk on how to correct T.V.I. problems. The R.S.O. has some equipment available to clubs for this purpose. It was felt that N.S.R.C. have a T.V.I. committee.

TUNING AROUND

The third edition of the CJ directory will be available at the following address. It contains 200 names not previously listed and many revisions. Send a qsl card but please include your phone number.  
Chicken Junction Directory  
Box 284  
Chatham Ont.

The code and theory classes seem to still be doing quite well with the average attendance high.

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Field Day

Field day will soon be here again and I'm sure it will be a big success and a lot of fun for those who can attend. Ralph Day is this year's Field day manager, so if you have any information give him a call. The club will need many operators so if you are available come out. Those who do not have their liscences can help out too. There is always a place for someone to log.

Henry Urbanowicz

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Club Net

The club net on 7.175 Mhz every Sunday morning does not seem to be doing too well. So, if you are home why not call in? Any mode can be used.

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For sale

Heath transmitter DX 60A \$60.00  
Dow-key relay DPDT \$12.00  
Antenna Hygain insulators (5 ) 40-80 meters \$10.00  
Hammarlund HQ-110 receiver \$160.00

Bill McPherson VE3CMM  
Pickering 839-1437

Wanted VFO (self powered)

George Britain VE3BCQ

Heath dx-60 with HG-10 VFO

Bob Jones VE3ADJ  
728-0643

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