NVARC
Nashoba Valley
Amateur Radio Club

SIGNAL

SPECIAL SERVICE CLUB

April 1996 Volume 5 Number 4

From The President's Desk

This is the last column I will be writing under this heading since my term of office is up as of the April meeting. It's been a lot of fun, and a lot of work. Taking on the newsletter, in addition to the presidency, due to the rapid loss of two editors in 1993 I've done both jobs. I plan to continue as the newsletter editor (unless someone else want's a shot at it, not to be taken casually though). I hope to incorporate more member articles in future issues (like Bob's great article in this issue). I also hope the new president will continue with a column. A presidents column is almost universal in club newsletters.

We have a lot of accomplishments to be proud of in the past three years. We have made a lot of changes in the club. We've changed our meeting place to a more comfortable one, the newsletter has been consistently published, we have many new members, and many older members (in membership years only) who have taken on new challenges such as Elmering. Teaching has become important for the club with two license classes each winter/spring for the past few years. We are now expected to participate in many local events to provide communications. We have been recognized by the ARRL with SSC for the club. These accomplishments took the work of many people. I hope that you will all support the new officers and the club as well in the next year as you did for me in the past year.

Predictions From The Past

"Computers in the future may weight no more than one and one-half tons." Popular Mechanics, forecasting the relentless march of science, 1949.
"I think there is a world market for maybe five computers." Thomas Watson, chairman of IBM, 1943

SKYWARN

Rob KD1CY the SKYWARN training coordinator has sent out the current list of training dates. The nearest session is tentatively scheduled for Nashua on May 10th at Daniel Webster College. There have been no details on registration yet. Contact me if you have any questions. Stan

This Month and Beyond

Once the elections are done…

Bruce will present on the tour of Field Day sites he visited last year. We will also convene a panel of "experts" to answer questions of any nature, pertaining to ham radio of course.

Upcoming Public Service Events

The following events for which we provide communications are coming up. Put them on your calendar.

Groton Road Race	April 28
Erik KA1RV	448-5536
Harvard Bike Race	June
Pepperell Road Race	July 5
Pepperell 4th July Parade	July 6 (noon)
Bike Race Leominster	July 4,5,6,7
Groton Septemberfest	Sept
Pepperell Soccer Tournament	Oct

For the Groton Road Race there will be a training meeting on Saturday the weekend before the race. That is Sat Apr 20 at 2:00 PM at the Groton Fire Station.

Volunteer Examiners

QST de W1AW
ARRL Bulletin 15 ARLB015
From ARRL Headquarters
Newington CT March 1, 1996
To all radio amateurs

The FCC has formally eliminated conflict-of-interest provisions that had applied to the administration of Amateur Radio exams. The action conforms Part 97 of the rules to the provisions of the Telecommunications Act of 1996, recently signed into law by President Clinton.

The Commission also eliminated a requirement that volunteer examiners and volunteer examiner coordinators maintain records of out-of-pocket expenses and annually certify those expenses to the FCC.

The FCC notes that VEs and VECs still may recover actual out-of-pocket costs from examinees. The maximum reimbursement fee is 6 dollar(s).07 for 1996.

The former provisions essentially precluded equipment manufacturers and their employees and anyone who prepares or distributes ham radio license study materials from administering Amateur Radio license examinations. The underlying purpose was to prevent an employee from favoring examinees who had purchases manuals or equipment produced or distributed by the VE or the VE s employer. The FCC has concluded that other rules provisions, combined with current Amateur Radio license examination procedures, will protect against potential abuses.

The FCC notice announcing the rules changes pointed out that Section 97.523 requires VECs to cooperate in maintaining a single question pool for each examination element. As a result, all exam materials and manuals must draw from the standard question pool, which is widely available to the public. Also, the FCC noted, each exam is administered by three VEs and coordinated by a VEC. The Commission said it would be highly unlikely for any examinee to be favored by a VE or VEC.

The FCC said the 12 years of experience with the VEC system has shown that breaches of trust by VECs and VEs can be dealt with swiftly and immediately by disaccrediting the offending VEs or rescinding the VEC agreement.

The FCC adopted the rules changes February 28, 1996. They become effective 30 days after publication in the Federal Register.

STS-76 SAREX

The STS-76 Shuttle mission was cut short by one day due to equipment problems. We don't know what impact that will have on the mission as far as QSLing.

Advancements

Bob KE1ED (N1UPQ) EXTRA

Meeting notes from March 21

The March meeting was a busy and large one. We had very good attendance for the evenings activities. There was a suggestion to have a technical discussion group meet for an hour before the regular meeting. We have verified that the hall is available for that period. After some discussion it was decided to poll the members to see if there was enough interest. After the regular introductions and announcements Larry Ober KC1VS, the ARRL Affiliated Club Coordinator for Eastern Mass presented the club with a certificate from the ARRL recognizing NVARC as a Special Service Club. Larry then had a brief Q & A session.

Next up was Don Haney KA1T who is the W1QSL Bureau Manager. Don spoke on the operation of the QSL bureau. He covered some of the statistics and some of the humorous things that have happened. He also pointed out some of the Do's and Don't of QSLing through the bureau. Don followed up the talk by breaking open a couple of cartons of QSL cards which we sorted while chatting and enjoying coffee and snacks.

Elections This Month

This month we hold elections. I hope everyone has considered what they can contribute to the club. We can't exist if everybody wants to sit back and be entertained. We can not only exist, but be very productive if everyone contributes. Many hands make light work as the saying goes.

Field Day

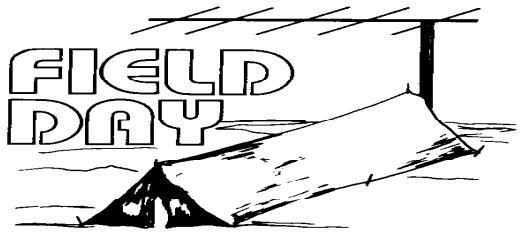
HF CW STATION
Bruce K1BG, Stan KD1LE

HF PHONE
Herm KE1EC, Bob KE1ED

POWER
Craig N1ABY, Ben KB1FJ

NOVICE STATION
John KA1ZTU, Wolfgang WA1VOU

SITE PERMISSIONS/PUBLICITY / SIGNS
Earl WR1Y, Dave N1MNX



Public Service/Preparedness

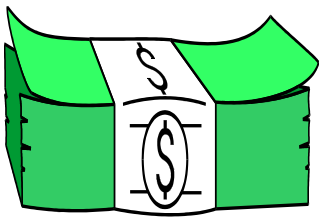
The season is upon us for many public service events. In order to be an asset and not a hindrance at one of these events we must come prepared. The communications coordinator has plenty to do without worrying about someone having dead batteries or not knowing how to set a frequency on their handheld. We don't want the event sponsor to see us as unorganized or ill prepared. Not if we want to be invited or requested back again. If you have questions about these things, get them sorted out ahead of time. Bring the equipment to a meeting, or call and ask someone.

On the issue of power. If your rig can run on external power consider making an adapter cable using the standard connectors. The Boston ARC standardized on this system and Mike Ardai wrote it up for QST. The ARRL Field Organization also supports this standard. In the club files are copies of information on this standard. A number of members use these power connectors for all their equipment. I have made cables for various power sources like the cigarette lighter using these connectors. I also have made external battery packs using regular AA and C size Nicads. These power sources use the standard connectors so anyone with a standard cable that fits on their rig side could use one if they needed power.

NVARC Slow Speed Net

The net meets Tuesday and Thursday at 8:00 P.M. on 28.123 MHz. Except the third Thursday of the month. that being the club meeting night.

$The Treasurer's Report $



Income for March was $102.00. Expenses were $30.41. In addition, one member made an extra contribution to the Education fund; thanks! (and we're going to spend some of it this month–see board meeting notes.) We are really fortunate that our newsletter copies are donated to the club; the copying charges for most clubs are equal to the postage cost. Current balances: General Fund $549.96, Educational Fund: $212.34. 73 /Ralph

Note: To print label for the newsletter I have to go through some printer swapping. For this reason I print labels several months in advance. This may mean that the expiration date on your label doesn't get updated immediately. Not to worry. Stan

Board Meeting Notes

We discussed plans for our summer activities this month. Last year we eliminated the July and August meetings and substituted a cookout. We decided to continue that with a cookout in August.. It's a bit more difficult to get in touch with everyone during the summer, so planning ahead will help us all out. We will put updated info in the newsletter. If someone else

would like to host this please see me. Fall back is at the KD1LE QTH.

The nominating committee (Craig Kalley, Earl Russell and Bob McArthur) reported back with a list of candidates for the April election. We thank them for their efforts.

We discussed Field Day but continued any further action till after the elections.

We had put together a handout that we were going to include with each runners packet for the Groton RR. But when we priced the cost to print 1500-2000 copies it seems it will be too expensive. Erik will check some other prices for printing.

We discussed whether there might be interest in fielding a team or club entry for the Mass QSO Party. More discussion at the meeting.

We voted to appropriate the sum of approximately $30 to purchase a coffee urn which would be donated to the Pepperell Parks and Recreation Commission. The urn would be kept at the Community Center for their use. We would be able to use it without hauling one in for each meeting.

We will be investigating the cost and interest in a subscription to QST for the Groton and Pepperell Libraries.

We are looking for an interested candidate to run the NVARC QSL Buro.

We discussed having a club web page. There are several possibilities for the placement of a page. The real issue is getting a good one put together. The thought was for it to be "static". A version of the club brochure so someone looking for a club could find us. We did not envision a constantly changing page. That takes a lot of work to maintain.

NVARC QSL BUREAU

The NVARC Buro sent out two pounds of cards since the last meeting.

Bring your cards and a QST label to the meeting or to breakfast and the club will take care of the shipping and bureau fee.

AMSAT News

HR AMSAT NEWS SERVICE BULLETIN 035-01 FROM AMSAT HQ SILVER SPRING, MD February 4, 1996

A series of Qualification Shock Tests have just been successfully completed for the Phase 3-D Specific Bearing Structure (SBS). The SBS is the structure that will be used to carry the Phase 3D spacecraft to orbit during launch. These tests were conducted in cooperation with the personnel at the US Air Force's LMSIL Survivability and Vulnerability Integration Center, at Little Mountain, Utah.

The tests exposed our P3D-SBS structure to the shock environment that is expected to be encountered on the Ariane 5 vehicle during launch. Following the shock exposure tests the performance of the spacecraft's separation system (in full-up, flight configuration) was also demonstrated.

The success of both of these tests has confirmed that our Phase 3D SBS design will withstand both the launch environment as well as to insure the P3D spacecraft will separate cleanly from the SBS after launch.

The Phase 3D Project is indebted to the Little Mountain Test Facility personnel for their help in completing these important tests.

ANS thanks Dick Jansson WD4FAB for the information.

TS-870 A Mini-Review by W1XP

I recently had an opportunity to use the new Kenwood TS 870 HF transceiver. This radio was purchased by a friend of mine and delivered to me for him to be picked up when he was in this country. Of course the radio needed to be checked out to insure that it worked properly. (It's a tough job, but somebody has to do it.) The following are some of my observations and impressions using this latest addition to Kenwoods line of HF transceivers.

The TS 870 is a 100 watt, 160 through 10 meter, CW/SSB/AM/FM transceiver. It has a built in automatic antenna tuner (matching network) and a full featured CW keyer. The radio operates on an external 13.8 volt power supply. The radio is larger than one normally thinks of as a mobile radio but since it operates on 13.8 volts it could be used in portable or mobile operation. It is in the middle range of both price and features.

The TS 870 is unique in that it is the first radio in the amateur market to use Digital Signal Processing (DSP) for IF filtering and demodulation on receive and for modulation and filtering on transmit. DSP has been used for several years in some of the better transceivers and in external "black boxes" to provide audio filtering and adaptive beat note (heterodyne) cancellers. The TS 870 moves the digital interface one step to the left, to the last IF frequency. This allows the DSP to be used to provide the final signal

selectivity before the detection process which is also done in the DSP. The DSP is also used to provide some of the audio filtering options provided by the earlier external or internal DSP circuitry. In addition the DSP is used to filter the audio from the microphone, provide gain/frequency shaping, the actual carrier generation and modulation, filtering and speech processing. All of these functions are carried out in a small handful of digital chips in stead of a much larger number of analog components, including crystal oscillators, crystal filters and analog transistors and integrated circuits. Plus hundreds of resistors and capacitors. Besides the elimination of the costly analog circuitry, another advantage of the DSP approach is that to change the characteristics of the radio, you don't have to change the circuitry. You only have to change the software. Select a different software program and you change from SSB to CW, to FM etc. No need to change to a different filter to change the IF selectivity as in most of the present radios on the market, you only change the programming of the chips in the digital signal processor. Additionally, DSP provides an ability to build filters with characteristics that can not be duplicated with physical components. Simply put, a narrow filter can be implemented with almost no ringing distortion, or a filter can be programmed to adapt to the desired signal to improve the signal to noise ratio.

In the TS 870 the DSP provides a variable IF selectivity that in CW operation is adjustable from 1000 Hz to 50 HZ (1000,800,600,400,200,100,50). The center frequency is also selected (the CW pitch) from 1000 Hz. to 400Hz. We have a BFO pitch control on a radio again. This means you can select the CW pitch you want to copy. To some of us older hams that started out with radios that had this option, this is a pleasant return to "the good old days". This ability is also available in many of the higher end analog radios. In SSB the selectivity is arranged so that the low and high cut off frequency is adjustable independently. This is a real advantage in suppression of QRM from stations on either side of the desired station. In addition adaptive filtering allows the suppression of heterodyne interference. This function is provided at either IF or audio. There is a noise suppressing filter that has a different CW and SSB implementation. It is impressive what this can do with power line noise, although it does give a funny sound to the background noise.

The bottom line.

I have been generally impressed with the radio in casual operating, mainly on CW. There is a reported close in, big signal handling problem, although I have not seen any evidence of it. I have not operated the radio in a big contest where the results might be quite different. The CW selectivity is excellent. The 50 and 100 Hz. filters sound very good with little ringing. The 50 Hz bandwidth may not sound quite as good as some of the audio filters I've used, but this is subjective. It certainly sounds as good at 50 Hz. as many of the 250 Hz analog filters I've used in other radios. I tend to prefer the 200 Hz position for tuning around the bands. The tuning rate is programmable at 10, 5 , 1 and 0.5 KHz. per dial revolution. I tend to use the 5 KHz. for most operating. The 10 or 5 KHz. range is selected in a menu to be described later. A "Fine" button on the panel selects the 1 or 0.5 KHz. range depending what rate is selected for the basic range. I find both of these ranges to be too slow. The built in keyer is programmable to model several of the popular keys, I.E. the Curtis for example. There are also four built in character memories that allow the programming of messages, CQ or contest exchanges for example. They are easily programmed. The keyer will also send a sequence number for a contest exchange. The radio is semi or full QSK. It is quite smooth and quiet if the internal amplifier control relay is turned off. Otherwise it is quite noisy.

For phone operating the radio has the ability to program the transmit audio response to increase the "talk power" of the signal while maintaining good signal quality. Tests I have run with the radio driving a 50 MHz xverter on a marginal path seem to indicate the processing does pay off in a signal that gets through under marginal conditions better with the audio processing enabled. The reports of the transmit audio from stations that know my voice are very good.

There is a menu of 69 additional functions that can be controlled. This menu is called up by a front panel button and then you step through the various menu selections changing the ones desired as you go. The effect of any changes are immediate upon entry. This includes such things as AGC time constants, CW pitch, DSP filter parameters, RS 232 interface parameters, the list goes on. There are actually two menus. A and B. They are identical so the radio can be programmed to have two different characters. This might be used where there are two operators that have different preferences about how the radio should be set up. It is only necessary to enable the desired menu, A or B (His or Hers). A lot of the things in the menu are convenient, but some are quite obscure. There

are several that I wish were on the front panel. CW pitch for one.

The radio has inputs of digital modes such as RTTY, Packet, and Amtor which I have not used. I have also not used the radio on AM or FM. It has a RS 232 port for computer control which I have not used . There is software with the radio which duplicates the radio on the computer screen and allows remote control of the radio. It takes a 386 or better which I do not have in the shack so haven't done anything with this at all.

Nits. Well some of the things I am sure I am just not use to. I like the audio gain on the left for example. Since I am right handed and copy with the right hand , the left hand on the audio gain. I really don't understand the logic behind the "Split " operation. It seems cumbersome to me. On the other hand the XIT control allows you to set in an offset easily and by switching between the RIT and XIT you can operate a small spilt easily checking the split freq. with the RIT then switching to the XIT on transmit. The RIT/XIT tuning range is 10 KHz. If you are impressed by numbers there are 50 push buttons and 17 knobs on the front panel to learn your way around. The audio from the small internal speaker leaves a lot to be desired, but on an external speaker the audio sounds quite good. There is a total absence of the annoying high freq. hiss that is present in some radios. The built in antenna coupler seems to work well and is a nice feature. I wish I had it in my mobile radio. There are two antenna connectors which is handy but "They Really Missed It" in my opinion by not putting in a separate receiving antenna port. This is a major oversight for anyone planning to use the radio on the lower HF bands where separate :"low noise " receiving antennas are the norm. I've heard rumor that Kenwood is planning to fix this. They did feel it important to put a receiving antenna output jack to connect a second receiver. I'm not sure why.

All in all I like the 870. The sensitivity compares favorably with the ten year old Tentec Corsair at least on 160 where I did some side by side comparison. Sensitivity has been the receiver problem for years. I would like to see how it stands up to big signals in a contest like the SS or CQWWDX. I am sure this is only the first of a new generation of transceivers. The technology has arrived at an affordable price. The few shortcomings will be corrected, and more and better chip sets and software will be developed in the next few years. The inherent advantages of DSP will out weigh the disadvantages, and radios with enhanced capabilities are on the affordable horizon.

I would like to thank G3OUF for the opportunity to play with his radio. 73 Bob W1XP

From the Video Library

The Video Library has seven titles to loan.

- **The Last Voice From Kuwait**
- The all China DF Competition
- **Your League at Work**
- **Signal to Noise Story**
- **Gonzaga Prep HS Radio Club Satellite Communications**
- **The New World of Amateur Radio**

You can get them anytime you can catch me at home, and I will bring the available tapes to each meeting. Stan

Resource List

Construction Earl Russell	448-5822
DX Bruce Blain	772-4138
NTS, MARS Stan Pozerski	433-5090
RACES Ben Akins	433-9227
TCP/IP Ralph Swick	582-7351

NVARC

Nashoba Valley Amateur Radio Club

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Editor: Stan Pozerski KD1LE
PIO: Earl Russell WR1Y

Meetings are held on the 3rd Thursday of the month - 7:30 p.m. - Pepperell Community Center
Talk-in 146.490 simplex

This newsletter is published monthly. Submissions, corrections and inquiries should be directed to the newsletter editor. Articles and graphics in most IBM-PC formats are OK.

Packet address: PEPMBX (145.09 MHz)