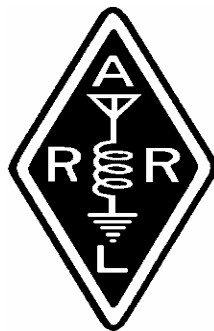


Nacogdoches Amateur Radio Club

Pres: Lon Glaze - AE5BN

VP: Tom Atchison - W5TV

Sec/Treas: Army Curtis - AE5P



MARCH MINUTES

MISSION STATEMENT

The Mission of the Nacogdoches Amateur Radio Club is to support and promote Amateur Radio by public service, offering training to unlicensed interested parties and licensed amateurs, mutual support of other amateurs, engaging events that promote amateur radio to the general public and other amateur radio operators, and continuing fellowship by regularly scheduled organized meetings and events.

The March meeting of the Nacogdoches Amateur Radio Club (NARC) was held as scheduled on March 4th. Twenty-three members and two guests were present. **Vice-President Tom, W5TV**, opened the meeting at 7:00 p.m. in the Bailey Library of Christ Episcopal Church. Each person present introduced himself. Minutes of the previous meeting were approved as published. The Treasurer's report was read.

Army - AE5P distributed a current club roster to all present.

Bob - K5ME distributed a questionnaire on club member activities. Look for a special report on his findings later in this newsletter.

John - W5FWR has again volunteered to handle QSLs received from the Columbia Shuttle Special Event Station operation. **AE5P** presented him with a large bag of QSL cards received to date.

Lufkin Hamfest scheduled for June 20th, same location as last year. NARC will do the concessions and VE testing as before.

Several possibilities for a Field Day site were discussed. Everyone is asked to consider them, and we will vote on a final choice at the next meeting.

On May 24th, the annual **N5YA/K5QE** cookout will be held at N5YA. All are invited.

Door prize drawing held, **Wesley - KE5RQX** was the winner.

Meeting was closed at 7:50 p.m.

Program:

Jerry - K5JLW gave a great presentation on a clothesline antenna. Very well done Jerry.



HAMMING IT UP

I sure am glad Spring Break is over. My boss took the first two days of this week off for vacation. Wednesday and Thursday they had the big yearly meeting in Houston. That left me all by myself at work for four whole days. I sure was busy. I was wore out by the time he made it back Friday morning.

My wife finally decided to get a laptop. She did tell me that I could use it when we did the VHF Contesting. Against my better judgment I consented to one that had Windows Vista on it. I hope it doesn't come back to bite me. I also have a six month return window if I need to. Everything seems to be doing ok on it so far. I have installed Roverlog and its manual too.

Having never had a laptop I had never seen fit to put wireless internet in the house. I had originally installed two Ethernet cards in the first computer and a crossover cable to the second computer's Ethernet card. This required that I have the first computer on to use the second computer. I check prices and specifications on some wireless routers that had good reputations. I later got with Andy and decided to get one that they sell. It is an 802.11n wireless that has a gigabit switch when running wires. It

also has a lifetime warranty and has a pretty handsome black case. I got with him on Saturday to pick the router up and get a couple of cables for the two desktops in the house. I got home to hook it up. I turned off all my internet sharing in both computers and cut power to the entire system. I installed the wires to the two desktops and the wire that goes to the modem. I turned it all back on and it worked, even the wireless on the laptop. I had already decided to turn on the security features. I made all my password changes, etc. That's when I ran into the trouble. I was connected but the internet wasn't working. I called Andy and of course he reminds me that I have to turn off the cable modem and turn it back on. I then remembered him telling me that earlier. I did that and the two desktops worked but the laptop still did not. I put the password, etc. in three different times manually and still couldn't get it to work. I finally copied the document with the

information in to a SD card and moved it to the laptop. Then I copied and pasted the information and it worked. I had typed that stuff in manually three different times and got it wrong each time. When all else fails, try, try again. Or in this case try it a different way. Everything seems much faster. I believe that the router is a much better way of doing this over using the cards in the piggybacking the computers. I should have made the change long ago or maybe I should have done it this way from the beginning.

Don't forget that Belton Hamfest is coming up Saturday April 18th.

The other day on one of the internet forums someone corrected someone for putting 73's. Someone else took up for him and posted a QSL card from 1AW Hiram Percy Maxim. It was imprinted with Best 73's and was signed by Hiram. If it was ok for him then I sure

won't correct anybody else for saying it.

Best 73's this is AE5BN
Lon

email: ae5bn@arrl.net

VP's CORNER

The next meeting of the Nacogdoches Amateur Club is on Wednesday, April 1. Since Mark, W5TXR, was ill and could not present his program in February, we have rescheduled his presentation entitled 'Effective Sensitivity' for this meeting.

As most of you know I have a particular interest in antennas. I am continuing to work on the series 'Basic Antennas', but there is an interesting article from Japan concerning antennas that is included in this issue instead of my usual antenna article. I hope you enjoy the article.

If you have any 'Show and Tell' matters, please bring them to the meeting. It is always exciting to hear

what people have that is new and/or different.

See you at the meeting.

73, Tom W5TV

email: w5tv@arrl.net

INTEREST QUIZ

At the March 4 meeting Bob, K5ME, handed out a short questionnaire. It was aimed at getting a feel for members' level of interest in HF propagation. Seventeen members returned the questionnaire. Bob appreciates those responses.

There were two factual questions in the quiz. Some 65% of respondents correctly converted local time to Universal Time. Also, 65% correctly identified sporadic-E as not being limited to VHF.

Respondents' preferences for HF/VHF+ operation showed no majority for any one category. However, a clear majority spend less than half their

operating time on HF. The results by category were:

<10%	47%
10-50%	18%
51-90%	24%
>90%	12%

Respondents' preferences for aspects of hamming were broad, and are shown in rank order:

Contests	65%
Building/experimenting	65%
DXing	53%
Emergency prep/response	53%
Ragchewing	41%
Networks	12%

In view of the high interest in contests, it seems a bit surprising that only 12% of respondents had ever made a band plan.

The responses indicate a range of interests, preferences, and knowledge, as one might expect in any group of active hams. They will help guide Bob in preparing his program. Thanks again for your participation.

VE TESTING

Our next VE testing is scheduled for Wednesday, April 15th at 7:00 p.m. in the Parish Hall of Christ Episcopal Church. Applicants should bring a picture ID, the original and a copy of their current Amateur license, the original of any CSCE's and \$15 to cover the cost of the exam(s). Correct change is always very much appreciated. Please note the slight increase in the cost of the exams.

73 de AE5P

email: ae5p@arrl.net

CLUB NETS

Remember to join us each week for the 2-meter nets sponsored by NARC. Each MONDAY is the NARC ARES/RACES net, at 8:00 p.m. on the club's 146.84 repeater (PL 141.3). Second, on THURSDAY evenings at 8:00 p.m. is the Deep East Texas Skywarn Net on the 147.32 repeater (PL 141.3). Please join us for one or both. We are

always looking for folks who would like to become net control operators. If you are interested, please contact any of the existing net controls. We will be pleased to help you in any way we can.

NEXT MEETING

The next meeting will be on Wednesday April 1st at 7:00 p.m. in the Bailey Library of Christ Episcopal Church. The church is at the corner of Starr and Mound Streets in Nacogdoches. If you have items for show and tell, please bring them. Hope to see y'all there.

QSL NEWS

John - W5FWR received two special QSL cards from the Columbia SES operation that he wanted me to pass on.

First was a very nice card from a young lady, KS3P. Kaitlyn was first licensed at the age of 8, and upgraded to Extra at the age of 9. Enough excuses

already; start hitting those books guys!

Second was a nice note and sample special QSL certificate from Pat, WD5FDO up in Carthage. Pat had to work us on 2 meters, as he is too close to get us on 20 or 40. The Panola County ARC is planning a SES on Saturday, April 25th, from the only international boundary marker with the US. It is a stone located where FM31 enters Louisiana from Panola County. At one time, there were other stones marking the US and Texas border along the Sabine River from the Gulf up northward. Over time, the river washed them all away except this one last stone. A unique piece of history.

ANTENNAS

Editor's note: This month, we have a special treat for our readers. I hope you enjoy the following special article on antennas that was called to me attention by Robert, KD5FEE. W5TV

will resume his excellent series on antennas next month.

Greetings from Tokyo and all the members of TIARA (Tokyo International Amateur Radio Association). I know I promised you a series of articles on Japanese amateur radio, but there is something so exciting I just have to take a break and tell you about it.

It all started with the work that Ed Coan (AH7L/7J1AAE) did on antenna pattern plotting using his personal computer and the A-to-D converter in his FT-1000. The circular, and even backward antenna patterns of some of our local TIARA club members brought home the point that what a good station needs is a good antenna. Ed's antenna looks great and the results verify it. He works regular schedules into Colorado and Maine, just like sunspots don't mean anything. My mini-beam just could not compare.

Well, I got to thinking about what we Tokyo apartment dwellers could do and realized that space is THE problem. How do you fit a full-sized beam on a balcony? Loading coils are the answer and the problem at the same time - the antenna radiation resistance drops as reactance is substituted for length. High current loops develop and the power is dissipated in the antenna instead of being radiated. If only the antenna didn't dissipate the power. Hmm...let's see, $P=E^2/R$; now if R were 0 then...

From my work, I have some contacts in research groups over at Tokyo University. Better yet, I knew a Japanese ham that is a graduate student there. The thought running through my head was to build a super-conducting antenna. This requires cryogenics, i.e. temperatures around minus 279 degrees Centigrade. I was able get the university folks interested in the project and we built a 10-meter

dipole test silicon wafer. They put together a lot of serial coils by "re-work" on the wafer; they were able to connect them so we had a super-conducting yagi. I took my TS-930 transceiver down to the lab for the first tests, but before we could test it, actual measurements showed it was resonant on 3.126 MHz. It seems that the normal equations for inductance don't work with super-conducting materials -- you need a lot fewer turns to get the same results compared to room temperature. Many measurements and trials later, we had a ten-meter resonant wafer. This time we put a 40-element beam on each wafer and stacked 4 wafers in the same assembly. That made a 160-element array on 10-meters in less than a half-foot cube (15 cm³).

The first test didn't go too well. I connected my TS-930 to the super-conducting wafer antenna and tuned it for 10 meters. At room temperature, we couldn't hear anything. Using a

heat pump, the lab technicians started lowering the antenna's temperature toward the super-conducting region. I was really impressed by how small the equipment is, and started thinking it might all fit in the shack. Just then, the TS-930 froze solid, which had a negative effect on its operating characteristics. This wouldn't be so easy after all; the coax connection would need some study!

We reworked the wafers to put inductive coupling on them, but I could find no way to efficiently couple to it from the conducting array. Fortunately the lab technicians came up with a new ceramic material that passed RF but not heat. Probably, something that Kyocera invented just for this use. I sent the TS-930 to the ham shop in Akihabara and asked them to touch it up for me. My friend Suzuki-San, JH1WWC (store manager at the ham shop), asked exactly how the paint had been peeled off around the coax connector --

lightning maybe? No, I assured him -- just low temperature exposure, without saying how low the temperatures were. The project had to stay secret and besides, Suzuki-San can repair anything!

Since it looked like it might be a while before the TS-930 would be repaired, I brought out my TS-940. I had already placed an order for a Yaesu FT-1000 anyway. After verifying that in the super-conducting range the antenna was resonant on 10-meters, we connected the TS-940. The ceramic material worked and the rig operated well as we began the cooling cycle. The band seemed dead even with the antenna at -150 degrees C. It took another 10 minutes to get to the super-conducting range -- then the TS-940 blew up. It seems our antenna had a bit more gain than the TS-940 front-end could take. Later measurements showed 500 volts coming out of the coax. A little hard to believe, but then what do I know about

cryogenic LSI antenna technology? The TS-940 was also returned to Suzuki-San, but this time he frowned a bit -- the front-end board did look like it had been hit by lightning. Not to worry, Suzuki-San can repair anything!

The FT-1000 arrived just in time to be able to continue experiments. We built a QSK attenuator to protect the receiver. With the LSI wafer antenna still inside the lab, we decided to try to make a contact on 10-meters. What a shock when we got it working! The first thing we heard was a couple of W2's talking locally on 10 meters and that was with 80 dB of attenuation. We had the antenna array on a rotatable mount; I moved it about a half-degree and the W2's disappeared. What beam width! We tuned them in again, and they were just about to sign off, so we thought we would try to work them. The rig was tuned up at 50 watts on a dummy load; we switched in the wafer antenna and gave N2BA a

call. The noise was unbelievable -- an ionized ray shot out from the antenna and hit the wall of the building. Before we knocked a hole in the band, we took a piece out of the lab wall! Ever wonder what an antenna pattern looks like in three dimensions? There was a oval hole in the wall of the lab -- about 1-cm high by 2-cm wide. We cut power quickly. N2BA came back on frequency a few minutes later and said he was using his back-up rig; something had taken his main rig off the air. For some reason, the station he was talking to never came back, so we decided not to transmit again until we knew for sure what was going on.

As near as we can tell, the antenna array has 620-dB gain over a dipole, but with a beamwidth of 0.75 degrees using the 60-dB points. With 50 watts output, the effective radiated power is 55 quadrillion watts at the center of the beam (5.5 with 13 zeroes). As soon as the University realized what we had built, the

entire project was taken away from us and turned over to the Japanese Self-Defense Force. Amateur radio "tinkering" has contributed to something, but I am not exactly sure what. I haven't the slightest idea what was in those wafers or how to build another set. Do you think someone may be interested in this idea for Star Wars/SDI?? What I'd give to use a much smaller set in the next CQ World Wide Contest!

A few months later, the University contacted all of us and asked just how close we had been to the antenna when operating. As best as I can figure, we were in the null behind the array. From what has been said so far, it looks like a secondary use for our antenna may be as a mass sterilizer, but confirmation will have to await the results of our medical tests. If our antenna ever hits the market, it looks like remote operation may be desirable.

As I am writing this, I have been informed that my friend Suzuki-San can't fix everything after all. He's written off the TS-930 and TS-940, and I just found out that before the university terminated the project, they tried one more time with my FT-1000, but without the 100-dB attenuator to protect the receiver. Its front-end now matches the 940's and it looks like it will be a while before I am on the air again.

Best 73,

Joe Speroni, AH0A /
7J1AAA

Ex-Technical Adviser
TIARA

1 April 1997

This story has been edited and reprinted from the April 1985 issue of the Tokyo International Amateur Radio Association's (TIARA) newsletter. Permission is hereby granted to reprint all or any portion of the material, provided credit is given to both TIARA NEWS and the author - Joe Speroni, AH0A/7J1AAA.