



NARS



NEWS



The Northwest Amateur Radio Society

Houston, Texas

December 1996

December Meeting is Home Brew Night

In December, members bring and discuss a home brew project. It can be a solution to a problem encountered in amateur radio, or just a better microphone switch box. This is an excellent opportunity to find out how

someone solved a problem and see new building techniques. This is your chance to show your project for the year. I plan to bring mine.

Mark Tyler K5GQ

Important Dates

Saturday, December 14 – Sunmart Texas Trail Endurance Run, Huntsville (call Walter for info, 350-6633)

Friday, December 20, 7:30 pm – NARS monthly General Membership meeting, Spring Cypress Presbyterian Church – Eyeball QSO's 7:00 pm

Monday, December 23, 7:00 pm – NARS Board of Directors meeting, IHOP, 5790 FM 1960 W, just West of Champions Forest Dr.

Tuesday, December 31 – NARS News deadline for articles to appear in January issue

Tuesday-Wednesday, Dec 31-Jan 1 – ARRL Straight Key Night

Friday, January 17, 1997, 7:30 pm – NARS Annual Banquet, Valley Ranch Bar-Be-Que Restaurant

NO VE License Exam Session in December – Next session Saturday, January 25, 8:30 am, Tomball Community Center, S. Cherry & Market streets (just South of Main)

Notice:

NARS membership dues is \$20 per year, renewable on anniversary of last year's full payment.

S. I. R. E. Thank You Letter



SIRE INC.
SELF-IMPROVEMENT
THRU RIDING EDUCATION

November 11, 1996

Northwest Amateur Radio Society
P.O. Box 690342
Houston, Texas 77269-0342

Dear Friends:

On behalf of the board, staff, volunteers and clients who are involved with SIRE - Self Improvement Thru Riding Education, we want to thank you for giving so generously of your time and energy to the 1996 Ride-A-Thon. By volunteering to staff the checkpoints and handle the radio communication chores, you enabled us to make this year's event the best one we have had. We want you to know that your participation was instrumental in making it so successful.

Funds raised from the Ride-A-Thon go to support our ongoing operations - therapeutic horseback riding programs for people with disabilities. Contributions will be used to care for the horses, the equipment, the facilities, and to cover portions of the instructors' salaries.

Many, many thanks for caring. We could not have done it without you! We hope we continue to merit your interest and concern in the future. The 1997 Ride-A-Thon will be held again next year in October, and we hope we can count on you then as well. We have enclosed an evaluation form so we can make next year's event even better. Your comments will be most appreciated.

Sincerely,

Harla Kaplan
Harla Kaplan
Event Coordinator

P.S. Our new mailing address is Route 2, Box 56, Hockley, Texas 77447

BREAKFAST

at Victors

4710 W FM 1960

Saturdays

8:00 AM

President's Corner

December 1996

I presented the cost associated with the DX cluster at the general membership meeting. The board has decided that the cluster should be funded with donations. I am now writing out my check to the DX cluster fund. There have been some problems with the node with regard to heat. I am asking that if anyone knows of a new location for the node to contact the board with details.

The elections were held at the November general membership meeting. Your 1997 officers are: Jim Kirk, KJ5X, President and Board Chairman; Harry Gage, N5WIZ, Vice President; Bob Argo, KC5JZO, Secretary; Keith Dutson, WD5DXL, Treasurer; Mark Condit, KM5AO, Director At Large; Bill Gary, K8CSG, Director At Large; Walter Hock, KK5LO, Director; Rudy Novotny, KB5ZXO, Director. Be sure to let them know you appreciate their dedication and service to the club.

I want to take this opportunity to thank all the board members for their help and support during the past year. Thanks especially go to OJ Quarles K1OJ, Paul Owen N5NXS, and Mike Lavender KB5WQJ who are leaving the board at the end of this year.

Speaking of the end of the year --
HAPPY HOLIDAYS to
EVERYBODY!!! Let's be real careful while driving and otherwise. I want to see everybody at the NARS Banquet in January.

Last month's meeting topic was a presentation by George Diletto, KD0RW, owner of the Houston Amateur Radio Store. He brought some very nice door prizes. Drop by his store and give him a word of thanks.

This month's meeting is Home Brew Night. So dust off that project, prized possession, or just plain interesting story. See ya there.

Walter Hock KK5LO

A Ham's Night Before Christmas

Yet another corruption of Clement Clarke Moore's classic Christmas tale, this time distorted by Gary Pearce KN4AQ, and the Raleigh Amateur Radio Society, Raleigh, NC, December 2, 1996.

Twass the night before Christmas,
And all through two-meters,
Not a signal was keying up
Any repeaters.

The antennas reached up
From the tower, quite high,
To catch the weak signals
That bounced from the sky.

The children, Tech-Pluses,
Took their HT's to bed,
And dreamed of the day
They'd be Extras, instead.

Mom put on her headphones,
I plugged in the key,
And we tuned 40 meters
For that rare ZK3.

When the meter was pegged
By a signal with power.
It smoked a small diode,
And, I swear, shook the tower.

Mom yanked off her phones,
And with all she could muster
Logged a spot of the signal
On the DX PacketCluster,

While I ran to the window
And peered up at the sky,
To see what could generate
RF that high.

It was way in the distance,
But the moon made it gleam --
A flying sleigh, with an
Eight element beam,

And a little old driver
Who looked slightly mean.
So I thought for a moment,
That it might be Wayne Green.

But no, it was Santa
The Santa of Hams.
On a mission, this Christmas
To clean up the bands.

He circled the tower,
Then stopped in his track,
And he slid down the coax
Right into the shack.

While Mom and I hid
Behind stacks of CQ,
This Santa of hamming
Knew just what to do.

He cleared off the shack desk
Of paper and parts,
And filled out all my late QSLs
For a start.

He ran copper braid,
Took a steel rod and pounded
It into the earth, till
The station was grounded.

He tightened loose fittings,
Resoldered connections,
Cranked down modulation,
Installed lightning protection.

He neutralized tubes
In my linear amp...
(Never worked right before --
Now it works like a champ).

A new, low-pass filter
Cleaned up the TV,
He corrected the settings
In my TNC.

He repaired the computer
That would not compute,
And he backed up the hard drive
And got it to boot.

Then, he reached really deep
In the bag that he brought,
And he pulled out a big box,
"A new rig?" I thought!

"A new Kenwood? An Icom?
A Yaesu, for me?!"
(If he thought I'd been bad
It might be QRP!)

Yes! The Ultimate Station!
How could I deserve this?
Could it be all those hours
That I worked Public Service?

He hooked it all up
And in record time, quickly
Worked 100 countries,
All down on 160.

I should have been happy,
It was my call he sent,
But the cards and the postage
Will cost two month's rent!

He made final adjustments,
And left a card by the key:
"To Gary, from Santa Claus.
Seventy-Three."

Then he grabbed his HT,
Looked me straight in the eye,
Punched a code on the pad,
And was gone -- no good bye.

I ran back to the station,
And the pile-up was big,
But a card from St. Nick
Would be worth my new rig.

Oh, too late, for his final
Came over the air.
It was copied all over.
It was heard everywhere.

The Ham's Santa exclaimed
What a ham might expect,
"Merry Christmas to all,
And to all, good DX."

(C) 1996 Gary Pearce KN4AQ

In the Beginning

Speaking of practice; last time I mentioned an operation that took place this past March in the WPX SSB contest. KB5YVT [our own Mike Hance K5NZ, ed] organized a multi-single operation of all new contesters at K5XI's Texas super station. Mike's story about the operation follows.

Giving New Ops a Chance

What's more rare than a P5 calling you in a DX contest? How about a Big Gun station owner opening his station to nine new contesters for an entire contest weekend. That's exactly what Sid Leach K5XI did for the 1996 WPX Phone Contest! His reason was simple: let some guys who have showed an interest in contesting operate from a top station and they should be hooked. Did it work?? Watch your log. I promise you'll see these calls in the future! Top station owners have spent unbelievable amounts of time and money to build first class stations that can compete with the best in the contest world. These stations must then be manned by "Top Ops" to achieve the best possible results on a given contest weekend. Letting operators who have virtually no contesting experience run the show isn't exactly the Big Gun owner's favorite scenario!

It's very understandable. Big Guns build these stations to win, and chances are you won't with a crew of inexperienced ops. However, winning wasn't the object in this contest—and it proved to be a success!

The Contest

Seeing the new guy's eyes when they first saw the towers, the operating positions, amps, computers, etc. at K5XI was a treat in itself! To simplify things, we didn't use all the operating positions. Instead, we activated two – one for running and one for multiplier hunting on the other bands. We ended up using both stations for mult hunting, because most of the ops found it tough to get used to running for the first time. Without the pressure to win hanging over their heads, they could ease into the flow by band mapping mults and DX.

This is really a great way to acquaint new contesters with computer logging techniques. After a weekend of "Searching and Pouncing," they could sit down at the mult station in CQWW and do a great job! Some of these guys had never used a computer for logging, so we set up a position for logging drill. I recommend practice to avoid major log repairs!

And So, It Begins

Let the contest begin! We observed a moment of silence for Sid, as he couldn't be with us. then off we went on 20 meters! Around 0400, the fun of working stateside dies down, and the reality of digging Qs out of the static on 40 and 75 meters sets in! I have them take a listen on 15 meters at 0430 to strains of: "Why? It's 10:30 p.m., 15 meters is probably dead." Their skeptical comments were replaced with: "WOW.. VKs! Amazing what you can hear when you have an antenna at 205 feet!" They get a few VKs and ZLs logged on 15 meters, then do the same on 20 meters. After an hour, it's back to the "pig farmers" and static for most of the night. At 0900, JAs start booming in on 40 meters! "Now this is way cool!" The guys picked up the split operation pretty well, with probably only a few goofed CQs on 7.040! Saturday was spent running some on 20 meters for stateside mults, but mostly Searching & Pouncing for DX on 20/15. When Saturday night came, the noise was too much for the troops to take. Instead of having a grumpy team all day Sunday, I had them take 5 hours off. Sunday they set a goal of 1.5 million points, which gave them something to shoot for. At 2100, they still needed 100k points. I think the next two hours they operated were the best of the whole weekend! Hunting for mults on 15/10, yelling across the shack "I'm ready to take it for 10 minutes." Every mult ringing the K5XI mult bell! They had a ball and made their goal! I think this is something they'll always remember, even if they never operate a big station again. Who knows, one of these guys may be a future hired gun!

If all the top stations were to pick a contest a year to let some new blood feel the thrill of operating one of these super stations, I think it would pay big dividends to the future of contesting! The operators were: KC5AMA, WD5DXL, K5ZTY, WA5DWX, WA1YIA, WA5POK, KK5GJ, KC5OFE and KJ5IP. All of the operators want to thank Sid for his generosity and vision.

Winding Things Up

That's great! I agree with Mike. It's a terrific idea for the Big Gun stations to open their doors to new operators for a contest every now and then – just like K5XI! Congratulations on a great job by everyone involved; my hat's off to Sid for opening his doors! One thing I noticed about the operator list is that there are only four with newer callsigns. Some of them have been licensed for a while, and I'm sure some are quite a bit older than me! It just goes to show, not all new contesters are newly licensed.

Reprinted from CQ Contest, September 1996

Paul Gentry WX9E

VE Session Results

NARS and Compaq VEs held another examination session on Saturday, November 23 in Tomball. Four candidates undertook six elements and all passed successfully. Two new General Class licenses were earned along with one codeless Technician Class license. Dan, KC5PCB, passed his General Class written exam and received a CSCE for that effort. Mike Frank, of Compaq, passed 13 wpm and became a General Class licensee. VEs participating in the session included K8CSG, KJ5X, WA5DWX, K5WH (ex-WD5GAZ) and KI5ME.

Bill Gary K8CSG

DX News

DXQuote -- "The light of the days that have been, The dark of the days that are. And DX stale and stinking Like the butt of a dead cigar..."

November began with the Solar Flux at 70, with the A at 10 and the K at 0. Band conditions were relatively decent for the big DXpedition to Burma (Myanmar). In the middle of the month, the SFI climbed to 74. Although accompanied by a double-digit A index, a nice opening into Africa appeared on Nov. 15. When the weekend for the CQWWDX (CW segment) contest appeared the solar flux index jumped to 91 for the entire weekend resulting in reasonable conditions for the contesters. By the end of the contest the SFI was 100, but conditions did not clearly reflect it.

DX worked: FW2OI (Wallis Island); 5Z4RL (Kenya); TF3GC (Iceland); 9J2CE (Zambia); 5N0MVE (Nigeria); TZ6LL (Mali); KH4/W7VWR (Midway Island); KH8/N5OLS (Am. Samoa); 7Q7RM (Malawi); TJ1PD (Cameroon); VK6VU (Australia) via LP; OX3SA (Greenland); 5T5U (Mauritania); FH5CB (Mayotte); C21NJ (Nauru Island); ZD7HI (St. Helena Island); 4F2BP (Philippine Islands); JD1AMA (Ogasawara Island); 9G1BJ (Ghana); FR5HQ (Reunion Island); C21BH (Martti Laine's birthday in Nauru); V85GA (Brunei); XZ1N (Myanmar/Burma); 9M8DB (East Malaysia).

DX heard: XY1HT appeared on Nov. 1 at 14192.2 Mc. with the pack in full bellow. One wonders how many could actually hear the XY station? SU1ER (Egypt); UA0ZCY (Russia); ZA1M (Albania); UN8BF (Russia); BV5BG (China); 4L5A (Georgia).

KC5OFI worked TG9SO and called for QSL info. WA5POK worked 3C21DX (Eq. Guinea) for a new country during the CQWWDX contest in late October. K5NZ (ex-KB5YVT) worked two new countries back to back -- first EI8S (Ireland) and then another country for which the EI8 asked him to listen. Not bad, Mike. WA5POK later worked 7X2LS and ZS6JJP on 15 meters. Dick, W5VHN, worked Ogasawara for another new country. Mike, K5 North Zulch, had a nice run on 80 and 160 meters in the middle of the month. The JARL contest over the weekend Nov. 9-10 yielded a long string of JA stations/QSOs for K8CSG during a pretty decent opening.

A nice opening appeared on 17 meters November 1. This led to my contact with Wallis Island in the midst of a large pileup. The JA boys on the Burma/Myanmar DXpedition came up on Nov. 1 also, though not readily readable in Texas unfortunately.

Fans of 160 meters can chase ZS8IR on Marion Island now. Look for him several days a week on 1824 and 1830 kc. after 0200Z.

Some Thoughts on DXing at the Bottom of the Sunspot Cycle. Based upon the technical

numbers which generally indicate propagation conditions, DXing should be at its absolute worst about now. We had a sustained low Solar Flux Index, and inconsistent A and K indices. We recently experienced nearly forty consecutive days with absolutely zero visible sunspots. These factors should generally mean rotten DXing to most of us. What reassures most serious DXers is that, despite these rotten indicators, band openings continue to appear, accompanied by DXpeditions of various kinds. Since the close of the CQWWDX contest (SSB portion), some surprising events have occurred. On November 1, FW2OI appeared and was worked on 18 Mc. On November 6 band openings appeared into Africa and the Pacific simultaneously, although two bands were involved. I worked TZ6LL (Mali) on 20 meters, then went to 17 meters and promptly worked KH4/W7VWR on Midway Island and KH8/N5OLS in American Samoa. The next day, November 7, 20 meters opened into Africa again, offering 7Q7RM (Malawi) and TJ1PD (Cameroon). None of these accomplishments compare favorably to those of sunspot peak days several years ago. But, remembering how the sunspots have gone away, they provide enough encouragement to keep even a serious DXer at his pursuits. And with a major DXpedition to Burma a week off as this is written, followed by an expensive, major DXpedition to Heard Island in about two months, there are thousands of DXers (budding and veterans alike) licking their chops and dreaming of their future glories. Remember the immortal words of Hugh Cassidy. DX IS!

There has been considerable confusion regarding the station signing T88T. The reason for the confusion is a bit obscure. T8 is the new prefix assigned by the International Telecommunications Union to Belau, in the area of the Pacific Ocean known for many years as the Western Caroline Islands, formerly KC6. This assignment was published in the April 1996 issue of the ARRL DXCC Countries List. One of the major islands in this country is Palau. A certain DX net control station on 20 meters was overheard recently telling some innocent questioner (2x3 call sign) that T8 was San Marino -- which is simply not correct. San Marino's prefix is T7, succeeding its prior prefix of M1, an unofficial prefix but one widely recognized by competent DXers. The DXpedition to Heard Island appears to be all set to go. All of the equipment has been shipped to Reunion Island where half of it is already loaded onto the ship. All but some \$30,000 of the approximately \$350,000 budgeted for the entire operation is in hand, with additional contributions expected to filter in when they get on the air. They expect to be on the air from Heard by Jan. 15 or before. Their expected stay is twelve days, with

operation on all bands and modes -- 20 operators! A good time to grab Heard for those who need it -- if propagation cooperates. The pack will be in full bellow!

XZ1N appeared on schedule in the midst of the Sweepstakes Contest (SSB). Unfortunately he was weak and watery here in the Houston area. Mike K5NZ worked him early Monday morning on 80m CW, OJ worked him on 10 MHz from his mobile between Houston and Lafayette, LA. As the solar flux gained a few numbers the XZ signal strength also grew a bit. They were clearly gearing up for the CW portion of the CQWWDX contest, operating on most of the bands as reflected on the DX cluster. Throughout the contest weekend they remained weak and watery here in Houston most of the time, finally becoming reasonably copyable after the contest when I got him on 20 meter SSB.

Bill Gary K8CSG

Special Interest Group (SIG) List

K5ZTY, Bill Stietenroth
893-3901, General Help
WA5DWX, Bill Denton
469-8331, General Help, Antennas
WA1YIA, OJ Quarles
955-1555, HF, General Help
5REJ, Allen Majeski
353-8652, General Help
WA5SAI, Larry McCain
469-6709, General Help
AB5TV, Madison Jones
350-4330, General Help, CW
K8CSG, Bill Gary
537-9240, General Help, DX
KC5EZQ, Bill Rister
537-8596, 694-6074
VHF/UHF, General Help
K5WNO, Deral Kent
548-7476, RS12/13, Sattelite
KC5RCC, George Carlson
376-8307, Electrical Design, Troubleshooting
KA3BKU, Don Bedell
370-6576, Packet
N5BA, Brian Derx
894-5942, VHF
KC5JZO, Bob Argo
288-7430, Computer Operating, Win'95
WD5DXL, Keith Dutson
351-7683, Computer Programming
W5NKZ, Jerry Smith
444-4491, HF, Advanced OSCAR, Antenna
KB5DTB, Joy Smith
444-4491, HF, Advanced OSCAR, Antenna
N5WIZ, Harry Gage
370-7488, Basic Advice - RFI
W5VHN, Dick Rooney
288-8424, Satellite
K5GQ, Mark Tyler
587-0256, Interference

Contest Connection

Here are the results of the November Spartan Sprint. It is sponsored by the 'Adventure Radio Society' which is a group that combines backpacking and camping events with ham radio. Their real forte is small and lightweight equipment and exotic locations for operations. The sprints are held the first monday of each month and have two categories for scoring. One category is the highest number of QSOs and the other is highest ratio of QSOs to weight of equipment. You will notice that I finished next to last in the latter category even though I placed first in the QSOs category. Well you know me, I just can't pass up a contest. CU---OJ---K1OJ

Subj: Results for November's Spartan Sprint
Date: 96-11-07 13:20:30 EST
From: Russ1031@aol.com

The results for the November Spartan Sprints seem, once again, to illustrate that QRP can be a patchy endeavor. The right coasters cleaned up, with W3TS winning in the Q's per pound category (again!) and WA1YIA taking the honors in QSOs. Out here, in the land of banana slugs, it was challenging in the extreme. There ought to be a special RST report for "in the nature of the slightest whisper."

W3TS seems to be a two-faceted genius. He's got a station that would levitate in a light breeze and is also a fine operator. However, there are many of us who could begin to close the gap if we could skin down our stations. THIS IS A HINT.

Thanks to all who participated and e-mailed me your logs. You are a remarkable bunch of operators!

Be sure to set your mail browser to a monospaced font, so that the following tables line up correctly.

Results sorted in the order of Q's per pound:

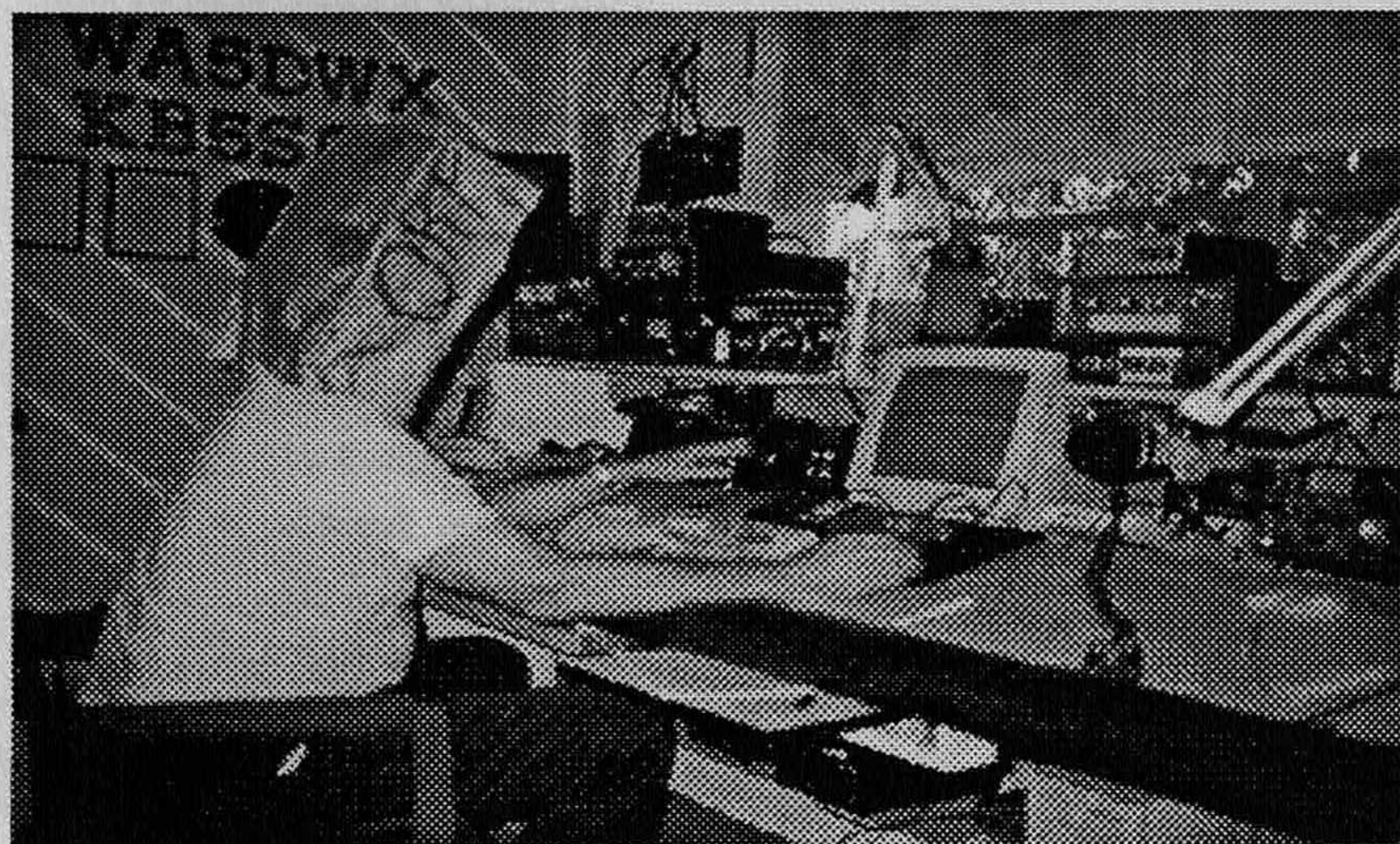
Call	Name	QSOs	Weight	Qs/Pound
W3TS	Mike	12	.7	17.14
AE4CA	Bob	13	1.2	10.83
AA7QU	Russ	13	2.7	4.81
KI6SN	Richard	8	1.8	4.44
WJ4P	Randy	4	1	4.00
N6XI	Rick	7	2.2	3.18
WB5QMP	Randy	5	1.8	2.78
WD6FDD	Rich	6	3.5	1.71
N0IBT	Dave	6	4.5	1.33
KS4L	Randy	9	11.6	0.78
WA1YIA	OJ	19	38	0.50
N9ZZ	Bob	1	9	0.11

Results sorted in the order of number of QSOs

Call	Name	QSOs	Weight	Qs/Pound
WA1YIA	OJ	19	38	0.50
AE4CA	Bob	13	1.2	10.83
AA7QU	Russ	13	2.7	4.81
W3TS	Mike	12	.7	17.14
KS4L	Randy	9	11.6	0.78
KI6SN	Richard	8	1.8	4.44
N6XI	Rick	7	2.2	3.18
WD6FDD	Rich	6	3.5	1.71
N0IBT	Dave	6	4.5	1.33
WB5QMP	Randy	5	1.8	2.78
WJ4P	Randy	4	1	4.00
N9ZZ	Bob	1	9	0.11

MARK THOSE CALENDARS FOR THE DECEMBER SPARTAN SPRINT, MONDAY, DECEMBER 2.

72, Russ Carpenter, AA7QU ARS #1



Who IS that masked man? Could it be ... Nah, not a chance with all those watts available.



by Keith Dutson

S
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B
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X

You know, we have some of the best testers in the country right here in our club. I'll just bet that if you add contest points by club in the USA, NARS would be right at the top of that list.

I'm still looking for some associate editors for the News. You won't have a lot to do, just help gather the stories that our members are willing to tell. I guarantee you'll have fun and be proud of your contribution to help keep our club communicating. Please see me about the At-large or Public Service editor positions, or send me email to kdutson@wt.net.

Part 1 – Buckyballs and Buckytubes: Are they in Ham Radio's Future?

Like many others I was writing Christmas cards and musing about relatives and friends and how we had all changed over the years. A random thought passed through the gray cells also about how electronic aircraft instrument technology had changed remarkably. Then I thought about buckyballs and buckytubes, a new technology of today just emerging, and what it might mean in terms of ham radio's future. Buckyballs and buckytubes were created by firing a laser at some carbon. When the vapor condensed molecules were found in the residue that resembled tiny soccer balls one billionth of a meter across (a nanometer). More on buckyballs later on. In the meantime lets look back at the five year period I remembered or you remember in the 60's and think of the differences we see in electronic technology today in our own transceivers.

In the early 60's I was one of a team of green room personnel that was putting together an aircraft instrument called "The AAA-4 Infrared Seeker Head." It was about 2.5 feet long and one foot in diameter. The bulk of the body was stuffed with P/C board circuitry to amplify, control and retransmit infrared data to a small screen in the pilot's cockpit, an infrared heat trail he could get in the cross-hairs and then fire a heat seeking missile at an enemy aircraft hiding in a cloud bank. You can guess the result. It was highly successful with the US Navy and the Air

Force in Vietnam. The front of the instrument had a quartz dome, ground and polished to a certain thickness to pass a certain band of infrared frequency. The dome had an opalescent film that allowed only infrared rays to pass. Inside the dome was a miniature "Mt. Palomar" reflecting telescope. The telescope was mounted on a small gyro that allowed limited circular movement to "sniff" out heat waves from the after burner of a jet aircraft and focus them on an infrared sensor. That roughly was aircraft instrument technology from my narrow individual view of it in 1962.

Fast forward 5 years or so – same company. I was then Chief Expediter responsible for getting on time deliveries of material to all projects contracted for and running in the house. In this role I merely saw an R & D project that called for a small group of young laser engineers to build an oversized laboratory model of a laser gyro for a space platform. The frame for it was machined out of a 450 pound cake of nickel cobalt steel to extremely exacting tolerances. It was approximately two feet across and about six inches high. The inside meter was lined with little front surface mirrors with a small laser gyro in the center. The theory of operation (roughly) was to keep the gyro (and therefor the platform) aimed at a certain chosen star in space for reference to attitude. When it drifted ever so slightly the angles of the

reflected laser beams would be sensed and the data sent to a computer which in turn would convert the data to send signals to appropriate inert gas jets around the perimeter of the platform. In turn selected jets would emit microbursts to gently nudge the platform back into alignment with the chosen reference star. Earlier I had said it was an oversized laboratory model. This was so our R & D engineers and the engineers for the prime contractor could get their hands inside and make necessary changes and adjustments to make the components work. The prime contractor had the unenviable task of integrating the instrument into their larger system and when they had proved it out, miniaturize the laser gyro down to the size of a baseball and still make it work! Once we delivered our lab model to the prime contractor any "need to know" evaporated so we did not know whether or not they were successful.

At the time I was very impressed with the state of advancement of electronic aircraft instrument technology from my small viewpoint in the late 1960's. Maybe some NARS members remember a similar period in their own field of electronic technology.

Article to be continued next month.

73 Harry Gage N5WIZ

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OJ Quarles, K1OJ 955-1555
Mark Condit, KM5AO 550-5659

MEMBERSHIP CHANGES

Please send address, phone, email and other changes to Marion Denton at NARS, P.O. Box 690342, Houston, TX 77269-0342.

FOR NARS INFORMATION CALL

Marion Denton, 469-8331, for General Information and Bill Gary, 537-9240, for VE Exam Information or send E-Mail to novotny@tenet.edu

NARS BREAKFAST every Saturday
8 AM at Victors, located at 4710 W FM 1960. Informal ragchew.

NARS LUNCH BUNCH every
Wednesday – location decided Tuesdays
on the informal morning 2 meter net.

NARS NETS

NARS RAGCHEW – MONDAY 8:00 PM
28.444 MHz
Net Coordinator – Open –

NARS INFO – WEDNESDAY 8:00 PM
146.06 / .66 MHz
Net Coordinator Bill, K8CSG

NARS REPEATERS

2 M – 146.060 / 146.660 MHz
Digipeter – 145.71 MHz
Call (W5NC) Alias (NARS)

NARS NEWS is published monthly by Northwest Amateur Radio Society

Editor: Keith Dutson, WD5DXL

Send all Articles and Materials for the Newsletter to: 24415 Deep Meadow, Tomball, TX 77375, (713) 351-7683, EMail kdutson@wt.net

Northwest Amateur Radio Society is a Special Service Club affiliated with the American Radio Relay League.

ARRL Club No. 2120

NARS Mailing Address: P.O. Box 690342, Houston, TX 77269-0342