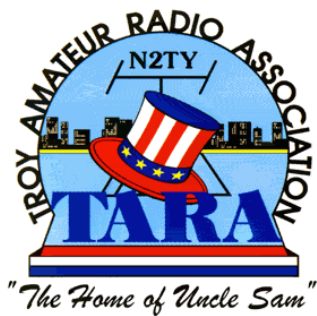




THE TARA NEWS

Affiliate of the American Radio Relay League

Volume 14

Issue 02

February 2003

Guest Speaker David Stark NF2G

TARA is proud to announce that our guest speaker for the February Meeting will be a well known local amateur radio operator and avid scanner enthusiast, David Stark NF2G. Dave will make a presentation about the hobby of scanning and the application of it to the NYSING notification network of which he is the founder.

Visit his web site at:

www.NF2G.COM



A SPECIAL NOTE FROM MARY HANNELL



Dear TARA members,

I would like to thank each of you for the special remembrances of Jim W2JHO, for the prayers and many acts of kindness you have offered- not only in the past two weeks, but also during the time Jim was a member of your club. You were all special to him and he cherished the times he spent with you, especially the meetings, breakfasts and picnics, and his beloved "Field Day". Through him, I was able to meet many of you, and am grateful for that privilege. The TARA club was so important to Jim, not only for the support with his radios, but also for the numerous close friendships it brought him.

Again, please accept my heartfelt thanks, and I ask that you keep the girls and me in your prayers.

Sincerely,

Mary Hannell

Sorry Gang, No Room for a Directory!!!

The PSK31 Rumble The Spring Wakeup

The PSK31 Rumble-The Spring Wakeup. Sponsored by Troy ARA, 0000z through 2400z, April 19th, PSK only. 80,40,20,15,10,6 meters.

Work stations once per band.

Exchange name, state/province/DX send dxcc prefix.

Operate 1 of 5 categories.

Normal -100w max/ Great-20wmax.

Super, 5w max / Novice or SWL.

Final score is QSO's * (W + VE + JA + VK call areas + 1 point per DX incl. your own). Mults. count once per band. To be valid, scores must be received via our online score submission form found at

<http://www.qsl.net/wm2u/score.html>

or e-mail Logs to wm2u@n2ty.org

by the last entry date 17th May

2003. Logs must be available for review if requested.

Please read web rules for details on <http://www.qsl.net/wm2u/rumble.html> or <http://www.n2ty.org>. Info e-mail to Bill Eddy, ny2u@n2ty.org or Ernie Mills, wm2u@n2ty.org



More than a Club



We're a Family





Silent Key - Jim Hannell - W2JHO

ALBANY James Grattan Hannell, 53, of Albany, died Sunday, January 26, 2003 at Albany Medical Center Hospital, after a brief illness. He was the husband of Mary E. Hannell. Born in Troy, he was the son of Robert S. Hannell of Latham and the late Mary Barron Hannell. A graduate of Shaker High School and Hudson Valley Community College, he resided in Latham until moving to Albany in 1975. Jim operated Jims Newsstand at the Legislative Office Building in Albany for the past 30 years. He was a communicant of Holy Cross Church, Albany. An avid amateur radio operator, using call letters W2JHO, he belonged to several area radio clubs. Besides his wife and father, he is survived by two daughters, Sarah C. Hannell and Kimberly A. Hannell of Albany; his sister, Mary Lee (Luis) Rocha of West Orange, N.J.; his mother-in-law, Gerrie Vieau of Syracuse; several nieces and nephews. Funeral service Wednesday at a time to be announced at Holy Cross Church, 12 Rosemont Street, Albany, where a Mass of Christian Burial will be celebrated. Friends were invited and called Tuesday 4 to 8 p.m. at the Bowen Funeral Home, 97 Old Loudon Road, Latham. Interment in St. Agnes Cemetery, Menands, NY. Condolences and directions were posted at www.bowenfuneralhome.com

This was a beautiful note which we all received from W2JHO's wife and daughters, on January 28, 2003 at 5:05 AM EST on the TARA-N2TY@yahoogroups.com and I felt that it was appropriate to share it with are readers that are not part of the email group.

Hi "Mr Bill" and all other "hams", As you can see by the time of this email, I am unable to sleep and wanted you to know how special you each, as individuals, and the TARA club were to Jim. I thank you for your friendship, and prayers, and will look for that support in the future. I have a special short notice favor to ask if any of you have pictures of Jim participating in club events such as field day, if you would share them and if possible, bring them to the funeral home with you if you are able to stop by today. Our picture board can not be complete without them. I look forward to seeing you again. And again thank you for being such an important part of Jim's life.

Sincerely,
Mary Hannell

Editor's Note: When I read this email from Mary, it touched me so much that it brought tears to my eyes. Even with all of the shock and tragedy going on in her life with Jim's passing, she and her daughters found the time to send a letter to Jimmy's friends at TARA.

**I dedicate this page to our friend, Jim who may be gone but is certainly not forgotten.
May he, Rest in Peace.**

I would like to also take this opportunity to thank all of the TARA members and all of the other amateur radio operators that were able to find time to go to the Bowen Funeral Home to pay their respects to Jim and his family.



General Topics

What can I do with EchoLink?

If you are a licensed Amateur Radio operator, you can use EchoLink to connect your station (or your computer) over the Internet to other amateurs using the same software. All users of EchoLink are registered with their callsign and a number, and the software shows the complete list of all stations currently logged on. Any two stations logged on to the system can then connect to each other, and carry on a voice QSO.

How do I get started using it?

First, [download](#) the software from this Web site. You will be asked to provide your callsign and e-mail address. Then, install the software on your PC, and be sure you have a good Internet connection (56k modem or better). The first time you use EchoLink, the system will automatically put in a request for your callsign and password to be validated. The request will be reviewed, and once you are validated (which usually takes less than a day), you're ready to go.

Is there a separate "sysop" version of the software?

There is only one version of EchoLink, which can be operated either in "user mode" or "sysop mode". Switching to Sysop mode enables all of the features needed for connecting a transceiver to EchoLink using your computer's sound card and one of the popular interface boards offered by WB2REM, VA3TO, or West Mountain Radio.

What new security features have been added?

In either mode, you can configure EchoLink to accept connections only from certain types of stations: repeaters, links, users, or all three. You can also set up a list of any number of "banned" callsigns, which will not be allowed access. In addition, you can block or accept connections according to their international callsign prefix, in order to comply with your country's rules regarding reciprocal control-operator privileges or third-party traffic restrictions.

In Sysop mode, by default, EchoLink announces each station by callsign when the station connects. This helps discourage "anonymous" connections to your link.

What about remote control?

For enhanced remote control, EchoLink includes a built-in, password-protected Web server which can be set up to accept commands from any Internet-connected computer. Basic functions allow you to remotely enable or disable the link, disconnect stations, and see who is currently using it. The software also supports a basic and extended set of DTMF commands for control over a radio link. For example, you can key in either the node number or the callsign of the station you wish to connect to.

Is EchoLink available for any platform besides Windows?

EchoLink is designed specifically to run under Microsoft Windows. Currently, there are no plans to offer versions of EchoLink for other platforms.

Apple Macintosh users have had success running EchoLink inside a virtual machine using Connectix *VirtualPC* (and an external router), but the VirtualPC VM must be configured to use a separate IP address, and the router configured to forward the EchoLink ports to that address, as described in [Firewall Solutions](#). See the VirtualPC documentation for details.

Do you accept contributions or donations?

Fortunately, because of the generous contributions of time and talent by volunteers, the system does not incur ongoing expenses, and we do not solicit or accept donations. (Except flowers for my wife :-).



The following guidelines are followed for all stations requesting access to the EchoLink system. These guidelines have been established to help ensure legal, courteous enjoyment of the system by every station. Every effort is made to apply these policies universally and fairly.

1. Access is granted only to licensed Amateur Radio operators worldwide. For new stations joining the network, access is not granted until the requesting station's callsign can be verified as valid. In some cases, proof of license (such as a photocopy of the station license) may be requested.
2. No "SWL" (listen-only) access is permitted. EchoLink is a two-way system by design, and there is no mechanism to support listen-only stations.
3. Stations which use the system are expected to abide by common courtesy and generally-accepted operating practices. Access privileges will be withdrawn for stations which operate with malicious intent, blatant disregard for international Amateur Radio regulations, or impersonation of another station.
4. When based upon complaints from several other users, repeated incidents of rude, threatening, or vulgar remarks from a particular station will not be tolerated, and is considered grounds for withdrawal of access privileges. This policy applies to any transmissions from a station, including those received over an RF link.
5. Once validated, a station must not share or "lend" its password to another station, particularly to an individual who is not licensed.
6. Please use only your permanent, fixed-station callsign to log in. Avoid using portable designators (e.g., K1RFD/2 or PY2/K1RFD), or temporary, special-event, or commemorative callsigns. This helps keep the callsign database to a manageable size.
7. The "addressing servers" are designed to be accessed by EchoLink software only. For the sake of system security and stability, any other access requires the permission of the server administrators. As a matter of security, in no event should the IP addresses (or Internet hostnames) of logged-in stations be displayed to anyone who is not a validated, logged-in

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The Origin of the Term - "HAM"

By: Gary Coffman –KE4ZV

<http://www.ac6v.com/73.htm>

Where did the term HAM come from? When did it come to popular use? The *real* explanation appears to be lost in the mists of time. There are a number of theories. Some more plausible than others. The one you'll likely hear the most is about "little station HAM". It goes like this. In the early days of radio, the government didn't assign call letters to amateurs. They just made up their own. Supposedly, three students at Harvard named Hyman, Almay, and Murray set up a station. They decided to use their initials as the call. Thus we have the little station HAM.

When the Navy tried to grab control of all radio frequencies, these guys are supposed to have testified before Congress, and the story of little station HAM supposedly didn't leave a dry eye in the house. The press is supposed to have picked up this story of little station HAM, and amateurs have been known as hams ever since. Unfortunately for this story, none of it checks out. A past president of the ARRL did extensive research in an attempt to confirm this story. There is nothing in the Congressional record about little station HAM. There is nothing in contemporary press records. And there is no record of a Hyman, Almay, or Murray at Harvard at the time this supposedly happened. This story first surfaced in an amateur publication in 1948, and doesn't seem likely to die. But it appears to have no factual basis. Another story you may hear is that ham is the result of a Cockney pronunciation of (h)amateur. But that is unlikely for two reasons. First, the term was in use in America before there was substantial amateur activity in Britain. And second, voice transmission wasn't used by amateurs of the era, so how did a pronunciation get propagated by Morse?

Another story you may hear is that it comes from a landline telegrapher's insult. Many operators of the day came from a landline background, and on the landlines a common insult was that someone was "ham fisted" in his sending. It is possible that commercial operators used this slang to refer to amateurs and it caught on. Certainly, the term LID came from landline telegrapher slang. (LID was a reference to use of a tobacco can lid on the sounder to aid a poor operator in copying Morse.) This one may be true. It wouldn't be the first time that a group adopted a term originally meant as an insult to serve as a slang term for themselves.

But the one I like best goes like this. This era was filled with pulp magazines catering to the experimenter. (Everyone at the end of the Victorian age apparently viewed himself as a closet inventor or tinkerer.) One of these magazines was called Home Amateur Mechanic, and it featured many simple radio sets a person could build. It is likely that when asked what kind of radio an operator was using, he might send back RIG HR ES HAM, meaning that it was one of the circuits shown in Home Amateur Mechanic magazine.

Since telegraphers tend to abbreviate everything, due to the low throughput of Morse, this is plausible, and Home Amateur Mechanic magazine certainly did exist in the correct era. So it was those HAM radios which started the use of ham in amateur radio.

Gary Coffman KE4ZV

ORIGIN OF HAM Another Version Of Ham is from the telegraph days where a poor operator was said to be "Ham-Fisted". Then there is this one. It is a corruption of "AM", which was a truncation of the word "amateur".

ARRL WEB: Why it's called ham radio

HAM

<http://www.arrl.org/whyham.html>

"Ham: a poor operator. A 'plug.'"

That's the definition of the word given in G. M. Dodge's *The Telegraph Instructor* even before radio. The definition has never changed in wire telegraphy. The first wireless operators were landline telegraphers who left their offices to go to sea or to man the coastal stations. They brought with them their language and much of the tradition of their older profession. In those early days, spark was king and every station occupied the same wavelength--or, more accurately perhaps, every station occupied the whole spectrum with its broad spark signal. Government stations, ships, coastal stations and the increasingly numerous amateur operators all competed for time and signal supremacy in each other's receivers. Many of the amateur stations were very powerful. Two amateurs, working across town, could effectively jam all the other operators in the area. When this happened, frustrated commercial operators would call the ship whose weaker signals had been blotted out by the amateurs and say "SRI OM THOSE #&\$!@ HAMS ARE JAMMING YOU."

Amateurs, possibly unfamiliar with the real meaning of the term, picked it up and applied it to themselves in true "Yankee Doodle" fashion and wore it with pride. As the years advanced, the original meaning has completely disappeared.

WHAT EVER HAPPENED TO TV CHANNEL 1

In 1945, the FCC decided to move the 42-50 Mcs Original FM Radio Band to 88-106 Mcs (later 88-108 MHz). Because FM broadcasting would be vacating 42-50 Mcs, TV Channel 1 was moved down to 44-50 Mcs in the old FM band. The TV & FM Radio Allocations which went into effect on February 25, 1946 (mybd), were as follows:

New FM radio band: 88-106 Mcs

Channel 1 44 - 50 Mcs

Channel 2 54-60 Mcs

Channel 3 60-66 Mcs

Channel 4 66-72 Mcs

Channel 5 76-82 Mcs

Channel 6 82-88 Mcs

Channels 7-13 as presently assigned

Although several television stations were scheduled to move to to the new Channel 1, no TV stations ever broadcast on 44 - 50 Mcs.

It could not be used immediately because it was necessary for all existing FM stations to move out of the 42-50 Mcs spectrum to the 88-106 Mcs FM Band.

When all the FM stations finally did move, the FCC decided to re-allocate 44 - 50 Mcs to other services. Thus, Channel 1 disappeared. There was no renumbering of the remaining channels.

AO-27 orbit affecting operating periods

According to AMSAT-NA, several stations recently have reported hearing AO-27's transponder on the air at unexpected times. AO-27's orbit has moved the satellite into a period of full-orbit solar illumination, explained Mike Seguin, N1JEZ. Because of this, the timed eclipse power regulator (TEPR) method of timing the transmitter does not work. As a result, AO-27's transmitter can only be turned on by ground-station command.

Seguin said, controllers will try to turn AO-27 on for analog work during weekends, when controllers are not downloading telemetry. Right now, however, controllers are working on new flight software that will permit uploading a transmitter schedule for the transmitter. "This will take us some time to write, debug, and upload to AO-27," he said. Seguin requested that operators be patient during this process and refrain from e-mails to AO-27 command stations asking when the satellite will be on.

Seguin noted that during seasons of full-orbit solar illumination, controllers will be able to have AO-27's transmitter on at night and for different parts of the world.

ARRL asks FCC not to Rush to Judgment

The ARRL has registered mixed feelings about the FCC's Spectrum Policy Task Force Report issued last November. In comments filed this week, the League called the report a positive first step in developing a comprehensive spectrum management approach. At the same time, the report fails to address the needs and goals of the Amateur Service and urged the FCC to not abandon longstanding allocation policies that are based on engineering.

The report's orientation toward commercial services makes it not wholly applicable to the Amateur Service, which cannot pay for spectrum access. ARRL said there's not been enough time to study the report's recommendations thoroughly, much less deploy them immediately.

The ARRL said it was "encouraged," however, that the FCC had worked to involve all portions of the tele -communications industry in developing a spectrum policy. ARRL asked the FCC to consider greater use of "negotiated rulemaking" to expedite allocation decisions.

In its initial comments to the Spectrum Policy Task Force filed last June, the ARRL said marketplace forces should not determine Amateur Radio spectrum allocations and that interference management is a technical, not an economic, issue.

The ARRL's comments on the FCC's Spectrum Policy Task Force Report in ET Docket 02-135 are available on the ARRL Web site at, <http://www.arrl.org/announce/regulatory/et02-135/arrl-comments.html>



New FCC Consumer E-mail Service

The FCC has inaugurated a new e-mail service. The FCC Consumer E-Bulletin was established to let consumers know about FCC developments and to disseminate FCC consumer information and to invite comments on FCC regulatory proposals.

Those signing up can expect to receive FCC fact sheets, consumer brochures and alerts, news releases, public notices, notices of proposed rulemaking, reports and orders, and other consumer-related information. The Consumer Education Office in the FCC's Consumer and Governmental Affairs Bureau (CGB) operates the free service.

To subscribe, send an e-mail to subscribe@info.fcc.gov. On either the subject line or in the message body, type "subscribe fcc-consumer-info <first name> <last name>". If you encounter difficulties subscribing, send an e-mail to neely@fcc.gov.

Starshine 3 Satellite Falls

The Starshine 3 satellite, the 91-kg disco ball in space, burned up in Earth's upper atmosphere above northern Canada or southern Greenland around 0515z on January 21. From the time of its September 29, 2001, launch, Starshine 3 SO-43 made 7434 revolutions around Earth.

Starshine 3's highly reflective surface was designed to be easily seen as it passed overhead at dawn and dusk, providing students the opportunity to participate in its primary mission of satellite tracking. Amateur Radio operators also could monitor AX.25 9600-baud telemetry on 145.825 MHz.

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The Project Starshine Web site has more information at <http://www.azinet.com/starshine>

TARA RTTY SPRINT RESULTS

I bet a good few of you never thought you'd be seeing the results from the TARA RTTY SPRINT this soon, but this year is different! If you go to our website you'll find that the results for 2002 have now been posted. Please review them at:

http://www.n2ty.org/rtty/scores_final.htm

1st KX7LDS 285 78 22230 MOABHP
2nd RW9C 220 68 14960 MOABHP
3rd LU3HY 120 50 6000 MOABHP

1st K4WW 200 69 13800 MOABLP
2nd YU7AL 66 34 2210 MOABLP

1st PJ2EL 384 79 30336 SOABHP
2nd K4GMH 311 83 25813 SOABHP
3rd 9A5W 286 77 22022 SOABHP

1st AA5AU 383 78 29874 SOABLP
2nd WX4TM 291 74 21534 SOABLP
3rd W4UEF 199 72 14328 SOABLP

1st M3OKU 14 10 140 NOV/TEC



There are a LOT of things that we're extremely grateful for this year. However, the main thing is YOUR PARTICIPATION! For a club of our size to generate this much excitement and on-the-air activity each year we need each of you. Without the support this contest has received since 1991 we would have never made it this far. That my friends is the plain & simple truth! Also, we had a fair number of new folks in this year's contest, something we can never get enough of. TARA tried out its NEW & IMPROVED On-line Score Submission this year and it worked flawlessly! But, the main reason it was successful was again because all of you took the time to use the system.

We have a few improvements that we'd like too try in the coming year and we'll keep you informed over the next couple of months of any develop - ments. TARA greatly appreciates all of your suggestions on how to improve things, so please keep them coming our way. We've always maintained that this IS NOT TARA's contest, it belongs to every RTTY contester that actively participates each year!

There are a few folks I'd like to thank personally. First, we have Don Hill, AA5AU, who each year tries his personal best to help/assist contesters from around the world. In addition I believe Don has held 1st Place SOABLP title for 7 years straight, certainly not an easy thing to do. If you're looking for info on RTTY Don has one of the PREMIER website that a RTTY contester should check out. If you've never been there, here is the link:
<http://www.aa5au.com/rtty>

Next, we have Shelby Summerville, K4WW, to acknowledge for his years of contributions to TARA. You see over the years TARA has been most fortunate to have friends such as K4WW & AA5AU. Every time we've needed some additional guidance and input these guys have been right there to answer the call. Shelby's a fantastic contester and he's another person that is more than willing to assist anyone that has questions. Also, he's very active on the bands besides just RTTY. Get this, Shelby has 5BWAS, 5BDXCC, DXCC RTTY, WAZ and WAC, pretty impressive!

TARA's RTTY Team consists of Karen Smith, KB2UUC; Joe Pasquini, N2NOU and Ed Eades, KC2HNC, who heads up HF Digital Contesting on behalf of TARA. These 3 members are responsible for such things as tracking all of the scores that are submitted, generating certificates, contest mailings, website updates...etc etc. Over the last couple of years the improvement you've seen are the results of these fine folks. As president of TARA I can only tell you that these individuals are great leaders and they make the RTTY contest what it is today.

OK....that's it! We have another year behind us and now it's time to look forward to the upcoming 12th - TARA RTTY SPRINT, coming this December 6 & 7, 2003! If you'd like to review the results of this year's sprint or year's past you should check out the following link.

<http://www.n2ty.org/rtty/>

Happy Contesting!
Bill Eddy - NY2U
President of TARA

SHUTTLE COLUMBIA EXPLODES



Crew Lost



The space shuttle Columbia broke up as it descended over central Texas on Saturday, February 01, 2003 before a scheduled landing at Kennedy Space Center in Florida. The shuttle's altitude was over 200,000 feet and was approximately 16 minutes from landing at Cape Canaveral when it exploded.

All seven crew members, were lost.

The STS-107 crew, headed by Commander Rick D. Husband, also included Pilot William C. McCool and Mission Specialists Kalpana Chawla, **KD5ESI**; David M. Brown, **KC5ZTC**; Laurel B. Clark, **KC5ZSU**, Michael P. Anderson, and Payload Specialist Ilan Ramon--a well-known Israeli Air Force pilot who had waited two years for a chance to go into space.

<http://www.arl.org/news/stories/2003/02/01/100/?nc=1>

The Bush administration stated it was **"highly unlikely"** that the shuttle fell victim to a **terrorist act**.

PRAYER FOR OUR ASTRONAUTS

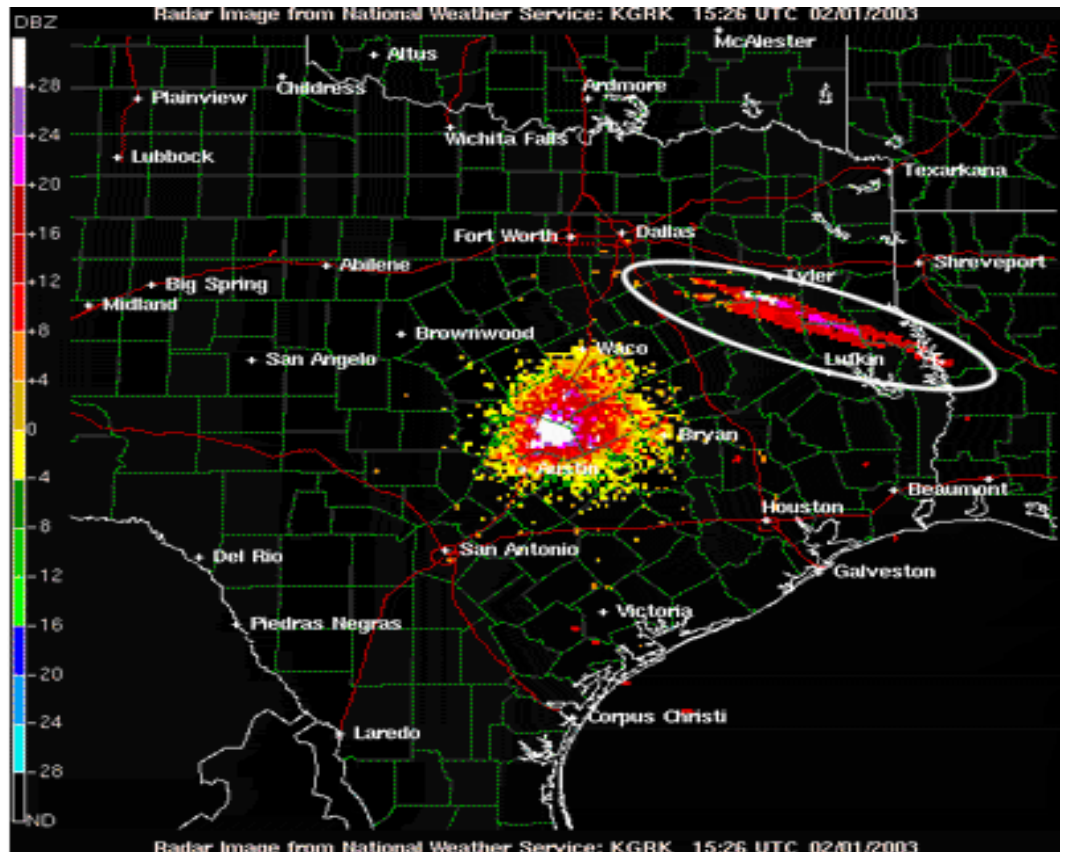
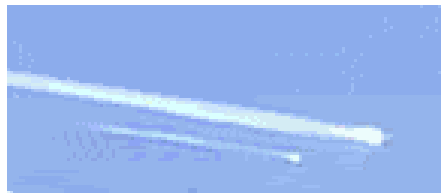


**LORD PLEASE, TAKE THESE
HERO'S INTO YOUR
HEART AS THEY ASCEND TO
HEAVEN.**

**THEY GAVE THEIR LIVES FOR THE
BENEFIT OF ALL MANKIND.
BLESS THE FAMILIES OF THE
FALLEN**

**AS THEY PREPARE FOR THIS
TIME OF GREAT LOSS.**

**OUR HEART, THOUGHTS, AND
PRAYERS ARE
WITH THEM
GOD BLESS THEM**



S.W.R. - What Every Amateur Should Know About It !!!

Here is some info on SWR that every ham needs. No matter what you call it, SWR, or standing wave ratio, is an indication of the degree of match, or mismatch, of load impedance to source impedance. Generally, we use this term to indicate how well the antenna and transmission line are matched to the transmitter output. Other terms, such as forward and reflected power, reflection coefficient and return loss, are used to indicate the degree of match or mismatch as well. How are these terms interrelated? This column will explain that. Because most land mobile radio technicians are more familiar with forward and reflected power measurements, the definitions of the other terms will be based on their relationship to forward and reflected power.

Forward and reflected power Those who work in the land mobile radio industry typically use a directional, in-line wattmeter to measure the forward power and the reflected power at the output of a transmitter. The comparison of the forward and reflected power indicates how well the load (transmission line and antenna) is accepting the power being delivered to it by the transmitter. The higher the reflected power, the higher the degree of mismatch and the lower the efficiency of the system. Not only is the mismatch reducing efficiency, but the reflected power also triggers a foldback protection circuit that reduces the transmitter output power. Thus, the reflected power has a two-fold effect in reducing system efficiency.

Generally, the experienced technician uses the forward and reflected power measurements to place a qualitative value on the antenna system. One doesn't normally think in terms of standing wave ratio, return loss or reflection coefficient. For example, a technician may measure the forward and reflected power at the transmitter output and find that the forward power is 100W and that the reflected power is 2W. This is a high ratio of forward-to-reflected power, and so all seems to be well. The qualitative analysis has been done simply by reading the forward and reflected power and mentally noting that the forward-to-reflected power ratio is high. Forget the quantitative analysis, right? Yes, maybe!

Effects of line loss In the above example, the forward-to-reflected power ratio was 100/2, or 50:1. Assuming a negligible line loss, this represents an excellent antenna match. However, suppose the line loss is 3dB. The line loss affects the forward power and the reflected power because both must travel the length of the line. Now, again suppose the forward power at the transmitter is 100W. With a 3dB line loss, the forward power at the antenna connection is 50W. Moreover, with a reflected power reading of 2W at the transmitter, the reflected power at the antenna must be 4W. Thus, the forward-to-reflected power at the antenna connection is actually 50:4 or 12.5:1, much worse than the 50:1 ratio found at the transmitter output. This illustrates just how transmission line loss can mask the true SWR when it is measured at the transmitter vs. measurements at the antenna. As long as you know the line loss, you can determine the true SWR at the antenna from measurements made at the transmitter. References to the previous example will be made throughout the remainder of this column.

Return loss If the forward and reflected power are known, the return loss can be easily determined from the formula:

$RL = 10\log(f/r)$ where RL is return loss, f is forward power, and r is reflected power.

In the example above, the forward power measured at the transmitter was 100W, and the reflected power was 2W for an f/r ratio of 50:1. The log of 50 is about 1.7. Thus, the return loss is 10 $\times$ 1.7, or 17dB. Remember too, that the forward-to-reflected power ratio at the antenna was 12.5. Because the log of 12.5 is about 1.1, the return loss at the antenna is 10 $\times$ 1.1, or 11dB. Notice that the difference between the return loss at the transmitter and antenna is 6dB, exactly twice the line loss. The general rule can be stated as: the return loss at the antenna will be reduced from the return loss at the transmitter, by a factor of twice the line loss. It is important to remember that the higher the return loss, the better the impedance match.

SWR To convert forward and reflected power measurements into an equivalent SWR figure, the following formula is used: **$S = 1 + [\text{square root of } (r/f) / 1 - \text{square root of } (r/f)]$ where S is SWR, r is reflected power and f is forward power.**

In the above example, the reflected power at the transmitter is 2W, and the forward power at the transmitter is 100W, so the ratio of r/f is 2/100 or 0.02. The square root of 0.02 is about 0.14. Thus, the SWR at the transmitter is: **$S = (1 + 0.14) / (1 - 0.14) = 1.14 / 0.86 = 1.33$**

The reflected power at the antenna is 4W, and the forward power at the antenna is 50W. The SWR at the antenna is found using the same formula and is approximately equal to 1.79. Again, the line loss masks the true SWR at the antenna as seen from the transmitter end.

Reflection coefficient The reflection coefficient can be derived from forward and reflected power measurements by using the following formula: **$G = \text{square root of } (r/f)$ where G represents reflection coefficient, r is reflected power and f is forward power.** Using the example at the transmitter, the ratio of r/f would be 2/100, or 0.02. The square root of 0.02 is approximately equal to 0.14. Thus, the reflection coefficient at the transmitter is 0.14. At the antenna, the ratio of r/f is 4/50, or 0.08. The square root of 0.08 is approximately equal to 0.28. It is interesting to note that for a line loss of 3dB, the reflection coefficient at the antenna is exactly twice the reflection coefficient at the transmitter.

Transmission loss Transmission loss is a term used to describe just how much the signal power is reduced by a given mismatch, zero being the perfect figure for a return loss of 0dB, or a standing wave ratio of 1:1 or a reflection coefficient of 0.0. The transmission loss can be determined from forward and reflected power by using the following formula: **$TL = 10\log[1 - (r/f)]$ where TL is transmission loss, r is reflected power and f is forward power.** Using our example, the forward power at the antenna was 50W, and the reflected power was 4W. Thus, the ratio r/f is 4/50, or 0.08, and $1 - 0.08 = 0.92$. The log of 0.92 is approximately equal to 0.036, and 10×0.036 is 0.36dB. Therefore, the transmission loss caused by the mismatch at the antenna is 0.36dB.

Additional line loss An additional line loss is caused by the standing waves on the line. The net power absorbed or radiated by a load is equal to the forward power minus the reflected power. The loss of the line can be calculated from the net input power minus the net output power. In our example, the net input power was 98W, and the net output power was 46W. Calculating the loss from input to output results in a figure of about 3.28dB. This is 0.28dB more than the loss of the line under normal matched conditions. The additional 0.28dB of loss is caused by the standing waves.

Summary: No matter what you might call it, the results are the same. A mismatched load will cause degradation in transmission efficiency. However, the actual transmission loss is not as severe as one might expect. Transmission line loss will mask the true SWR that exists at the antenna when measurements are made at the transmitter. By using the formulas presented here you can convert forward and reflected power into any of the other units of measure. —Unable to Locate Originating SOURCE 8

AMSAT AO-50 goes into Orbit

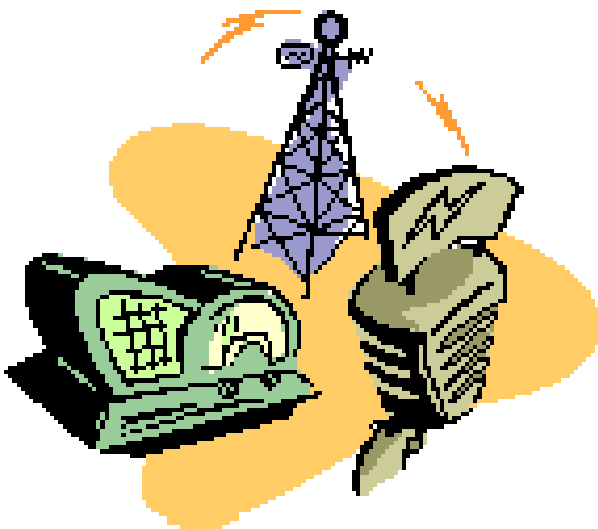


A third satellite in the SaudiSat series has earned an OSCAR designation from AMSAT, SO-50. The Amateur Radio payload was successfully placed into orbit December 20 from Russia atop a modified SS-18 intercontinental ballistic missile.

The German-made SAFIR-M Amateur Radio payload went into orbit during the same launch. SaudiSat-1C is a project of the Space Research Institute of the King Abdulaziz City for Science and Technology (KACST). SaudiSat-1C follows the 2000 launch of SaudiSats 1A and 1B. Now in a 650-km orbit, SaudiSat-1C carries several experiments, including a new Mode J FM amateur repeater. The downlink frequency is 436.775 MHz. The uplink frequency is 145.850 MHz. A 67 Hz CTCSS tone is required for access. The repeater will be available to amateurs worldwide as power permits.

AMSAT-NA President Robin Haighton, VE3FRH, said SaudiSat-1C will require activation on each pass by a designated control operator. "A world wide network of designated control operators is now being developed so that radio amateurs may begin using the satellite immediately," he said. The NORAD identifier for two-line Keplerian elements is 27607.

The new satellite is also equipped with capabilities to provide vital data concerning weather conditions and oil exploration as well as to monitor the movement of vehicles in remote regions of Saudi Arabia.



Rensselaer Co. RACES / ARES Returns to Public Safety Building



Effective with the January meeting of RC RACES/ARES all future meetings will be held in the large meeting room immediately to the left, as you enter the main lobby of the Rensselaer Co. Public Safety Building located at 4000 Main Street in South Troy, NY.

Pictured from left to right are V.P. June Kinerson- KB2JTG, President & 2nd R.O. Ken Davis – KB2KFV, 1st R.O. Dave Kinerson–WB2VXS, Chief Radio Officer Jim Noble –K2ZP and Joe Squillace III – KB2HLC. Not pictured but in attendance was our Club Secretary, Tom Stewart KC2FCR.

The move back to the Public Safety Building was made by a Team effort by K2ZP and KB2KFV to attract more amateurs to a larger meeting room where larger presentations could be held in future months.

After a recent discussion with county public safety officials, RC RACES/ARES was assured that the 147.18 repeater would be up on the new Grafton Tower by late March 2003.

The officers of the organization would like to encourage all Local amateurs to join our group. If you would like to join, just go to the TARA website and click on RACES to fill out the online application or contact the following people:
Chief Radio Officer Jim Noble at K2ZP@nycap.rr.com or
ARES President Ken Davis at KB2KFV@N2TY.ORG or
call Ken at (518) 272-0112.

Brew Crew Meets
Jan 22, 12 noon
March 8, 12 noon
11 AM Frank's Diner



A.T.V.E.T. EXAM Schedule for 2003

Our local Albany – Troy Volunteer Examiner Team has announced the following dates and times for amateur radio exams for the year 2003.

ATVET will again be holding their exam sessions in the C.I.I. Building (Center for Industrial Innovations), Room 3051, on the Campus of R.P.I.. Examination room doors will open 40 minutes prior to the exam time, with exams starting at the times indicated above. NOBODY will be admitted into the exam room after the starting time. ATVET never requires any pre-registration for any of their exams. A **"NEW"** test fee of \$12.00 either cash, or check (payable to [ARRL-VEC](#)), is required for those taking any of the exam elements offered by this team.

Make sure you bring two proofs of identification, with one being a picture ID. Also bring all of your original documentation (current license, CSCEs...etc.), along with photocopies, calculators, pens and pencils to the exam session. Anyone needing special handicap arrangements is asked to call in advance. The CII Building is handicapped accessible.

Cancellations, if needed, will be announced on both the Capital District Repeater Net (Nightly on 146.94MHz at 6:30 PM) and WGY - 810 AM. Talk-in on 145.170 repeater.

February 8, 2003 (Sat.) 10:00 AM - 1:00 PM (doors open 9:20 AM)
May 10, 2003 (Sat.) 10:00 AM - 1:00 PM (doors open 9:20 AM)
July 23, 2003 (Wed.) 7:00 PM - 10:00 PM (doors open 6:20 PM)
October 11, 2003 (Sat.) 10:00 AM - 1:00 PM (doors open 9:20 AM)
November 8, 2003 (Sat.) 10:00 AM - 1:00 PM (doors open 9:20 AM)

A.T.V.E.T.

ATVET CONTACT: Nels Williams wb2sbo@aol.com or 518-439-7357
ATVET LIAISON: Gerald Murray, atvet@n2ty.org or 518-482-8700

Texas amateurs aid in shuttle debris recovery, cataloging

Amateur Radio Emergency Service (ARES) and SKYWARN volunteers in Nacogdoches, Texas, have been assisting local emergency management officials and NASA to locate and catalog debris from the Columbia shuttle. The shuttle and its crew of seven, including three hams, were lost over Texas February 1.

ARES and SKYWARN volunteers from the Nacogdoches Amateur Radio Club have been surveying the area in and around Nacogdoches looking for shuttle debris. Public Information Officer Tim Lewallen, KD5ING, of the Nacogdoches Amateur Radio Club said amateurs have been accompanying officials from both NASA and the EPA to expedite the search and clean up of area schools. Texas officials have cancelled school in most of East Texas because of fears that shuttle debris could pose a health hazard. "Usually we just get the coordinates, take a photo and move on to the next site," Lewallen said, "and someone from NASA will come along and pick up the piece later."

He said the club had additional volunteers lined up for duty over the next few days, with amateurs coming from East Texas, Houston and Dallas. The ARES and SKYWARN volunteers have been working with emergency officials from Nacogdoches County, Texas Rangers, NASA, Texas Department of Public Safety, EPA and the National Guard.

The ARES and SKYWARN volunteers also were following up on NASA-provided telemetry and radar information that indicates where debris might be found, Lewallen said. The search area includes densely forested areas. NASA has requested that those encountering debris avoid any contact with it and cautioned that persons found with stolen accident debris will be prosecuted to the full extent of the law.



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 Secretary: Marilyn Davis, KB2JZI.....272-0112
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THE TARA NEWS

Troy Amateur Radio Association, Inc.

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Troy, New York, 12181-1292



Visit us on the Internet

at

<http://www.n2ty.org/>

Next Meeting

Tuesday, February 18, 2003

7:30 p.m.

Green Island Municipal Center

Intersection of

Hudson Avenue & George Street

HANDICAP ACCESSIBLE

Parking Lot on Hudson Avenue

side of building

Troy's Full Service Repeaters

145.170/R

444.225/R