



Crosstalk

Issue #7

July, 2001

President's Message



affiliated club



Since Field day is over let us not forget that our Hamfest is coming up. We will need lots of help both before and during this event, it may be our only way of raising funds to support our activities.

The big news is field day and as I write this the scores have not yet been tallied. It looks like we did better than last year. Despite a slow start due to rain most stations were up and running at 1400. The generator ran fine and there was plenty of power for all including John Zaruba's camper (AA2BN) which was air conditioned for the whole time. Thanks to several of the members help we set up the generator (batteries and gas cans) and started it up at 1200 Saturday and it ran until 1400 Sunday with a 5 min. planned shutdown at midnight to check the oil etc.

Everyone enjoyed the baked ziti, salad and garlic bread that Irma and Chuck Colabrese made for our Saturday supper and the Hoagies and food and drink that Bob KR2U supplied.

As I write this it appears that we will not be doing the 4H parking this year so we will have to look for another activity to replace it.

Lou Joseph (W2LYL) did a fine job as chairman of field day and things went smoothly due to his many hours of preparing the sites so we could have a pleasant time and productive event. I know this cause I ran into him on two occasions when I was there too.

I couldn't but notice there were several members at the Field Day that I rarely see at meetings. I realize that some have family and work commitments and it is not easy too get to meetings but I ask you to try to get to some of the meetings.

There will be at least two public service events coming up soon, the Pitman Crop walk and the Lupus Walk on Sept 23 at Washington Lake Park. I hope we can have a good turnout for both events.

That about covers it for this month...

73,

Ray WB2NBJ

DX Dope

By Doug Gehring WA2NPD

First off, I want to thank all the Club DXers who participated in last month's yearly survey. Some of you made substantial progress during the year. It won't be long before some of us catch the pacesetter N2SS. My apologies to W2YC who should have displayed footnotes 2 and 3 instead of two ones. Dave has the eight band DXCC Award and the seven band WAZ Award. I hope there were no more glitches.

In keeping with our pirate discussion of two months ago, our own WA2LET recently worked Tom, 3W7CW and joyfully fired off his QSL (greenstamp included) to the SP5 manager. This was a new country (Vietnam) for Wayne. However, much to Wayne's dismay, he read in a subsequent 425 Report, that a pirate has been busy using Tom's call, that Tom has been off the air for some time, and not to waste your time with him. Also, Tom is in the process of relocating to Saigon and will next be up as 3W5CW in October. All singularly discouraging, when suddenly, Wayne received what appears to be a perfectly legitimate QSL card - a beautiful (glossy) card with all information complete and correct - and from the legitimate manger!?! This prompted a call to the DXCC desk where we learned the following: (1) No paperwork has, to date, been received at the League, hence, 3W7CW is not yet legit; (2) Yes, it's true that some pirates do QSL, especially if the card and postage are paid for (greenstamp), and (3) Yes, some pirates really get their "jollies" by sending out bogus QSL's on top of their QSO's! How sick!! Well, stay tuned, the jury is still out on this one. Meantime, Wayne is looking for another 3W or XV contact.

So what's up for this month?

	A	B	C	D	E
1	<u>Station</u>	<u>Dates</u>	<u>Freq / Mode</u>	<u>Rarity</u>	<u>Country</u>
2	JW4LN	7/6-7/23	40-20;CW,RTTY (6M)	2	Svalbard
3	FP /H/C	7/26-8/1	80-10 (6?);CW,PSK	1	St. Pierre & M.
4	SV9/WB2GAI	6/29-8/12	160-10;CW	3	Crete
5	OJO/ H/C	7/12-7/16	160-6;SSB,CW,RTTY	3	Market Reef
6	7Q7YL	Now 4 2 Yrs	HF-6;Not Given	4	Malawi
7	3V2GI	7/5-7/12	YT1AD op; Not Given	3	Tunisia
8	C6/ H/C	7/13-7/22	80-10;ALL	1	Bahamas
9	C6/ H/C	7/25-8/1	40-6;SSB,CW,PSK	1	Bahamas
10	C93AN, et al	6/30-7/9	HF-6;SSB,CW	3	Mozambique
11	GOKOM/VP9	7/14-7/22	80-6;SSB,CW	1	Bermuda
12	FO/F6FTL	6/15-7/15	Not Given	2	Fr. Polynesia

* 5 is rarest

TNX to the Weekly DX, 425 DX News, K2JF, AA2WN, and WA2LET

Propagation #10

by John Fisher, K2JF

PART 10 AND LAST ONE

Radio Noise and Require Signal Strength

A. Required Signal Strength - The minimum radio field intensity necessary to allow the satisfactory reception of an intelligible signal of a particular type in the presence of radio noise at the receiving station is called the required signal strength for this type of service. As a propagation factor, the required signal strength is subject to wide variation. It depends on the receiving set; the local noise or STATIC; the type of modulation of the radio wave, or, in other words the type of service; and the grade of service desired - e.g., barely intelligible, high fidelity and so on.

B. Types of Radio Noise - Radio noise may be defined as interference, the energy of which is not confined to a narrow band of frequencies. Two general types of noise may be distinguished: (1) Impulse noise, which is interference resulting from a single elementary disturbance, or from an aggregate of elementary disturbances with systematic relative phase; and (2) Random, or fluctuation noise, which is the aggregate of a large number of elementary disturbances with random relative phases. A distinction between impulse and random noise is not always easy to make. However, electrical, or man-made, noise caused by the operation of electrical equipment is usually of the impulse type, whereas atmospheric noise, originating in thunderstorms, or caused by other atmospheric conditions, ordinarily may be considered to have the bandwidth characteristics of random noise. The best example of random noise is the fluctuations noise originating in the resistance components of impedance elements in the receiver or brought about by the fluctuations of electrons in the front end of the semiconductors or vacuum tubes. Another example is the noise generated by cosmic rays, which are sufficiently high in frequency to penetrate the atmosphere of the earth. This cosmic noise is noticeable only in receivers capable of detecting these frequencies.

(1) Atmospheric Noise - As the frequencies under consideration in this series, atmospheric noise and precipitation noise are the most important types to be considered. Radio noise from electrical apparatus, such as the ignition systems of automobiles, may be very serious, but is, more or less, under the control of the observer, and can be largely eliminated if necessary. Atmospheric or precipitation noise, on the other hand, since it originates in thunderstorms, or in rain, snow, or dust storms, usually cannot be eliminated and thus sets the limit for radio reception. Most atmospheric noise is considered to originate in the lightning flashes associated with thunderstorms.

(2) Cosmic and Solar Radio Noise - Between frequencies of about 10 and 100 MHz, cosmic radio noise originating in interstellar space is known to be the principal source of interference to reception under many circumstances.
continued

Propagation #10 *continued*

As stated, above cosmic noise has about the same characteristics as the fluctuations noise originating in components of a receiving set. The sources of cosmic noise are not distributed evenly over the sky but tend to be concentrated in several regions of the celestial sphere, the principal of these regions being near the center of the MILKY WAY. Consequently, when received on a directional antenna, the noise varies in characteristic manner from hour to hour and from day to day. The reason for the existence of cosmic noise is not well known. Your author did some studies into noises from the MAGNETOSPHERE and found some very interesting results. This along with the study of the "LUXEMBOURG" effect. Some investigators believe it to be radio-frequency radiation from eruptions, similar to the spot eruptions on our sun, occurring on all the stars in the galaxy; others have considered it as originating in electron activity in the space between the stars. Recently, it has been found that the sun also acts as radiator of radio noise at frequencies from about 200 MHz up. Except at the time of large sunspot eruptions, solar noise is important only in very high frequencies and when highly directional antennas actually are pointed at the sun.

(3) Receiving Set Noise - Noise generated internally in a receiving set is caused by the random motion of electrons in resistance components of impedance elements and in the fluctuations of the electrons in vacuum tubes and semiconductors. In the absence of all external noise, signals, to be intelligible, must be strong enough to override this internal noise. With only internal noise present, the ability of a receiver to receive a signal usually is expressed as the noise figure of the receiver. Experimental determination of the receiver input terminal voltage required to override the internal noise. The modern Amateur receivers have excellent noise figures.

C. Noise Figure.. For many years, radio engineers were faced with the problem of devising a system for rating a receiver or an amplifier on its merits from the standpoint of noise. The problem was complicated by the fact that in addition to the useful output voltage of a generator (the generator, under operating conditions, being an antenna and the useful output voltage being the desired signal voltage) a certain noise voltage is always present. In an antenna, this noise voltage would include that caused by the thermal resistor noise, and atmospheric and cosmic noise; in a standard voltage generator, this voltage would include resistor noise. Because of the fluctuations of atmospheric and cosmic-noise voltages with time, location, and construction and orientation on of the antenna, these noise voltages do not offer constant standard for rating a receiver or an amplifier. However, thermal noise, presenting a readily computed voltage, offers a satisfactory standard against which the noise introduced by a receiver or an amplifier can be rated. Based on this principle, a system of rating a receiver in terms of the noise figure has been devised for this purpose.

(1) In a receiving system, the total noise is the sum of the tube, or semiconductor noise, the thermal noise in the input circuit, the thermal output circuit, and the antenna noise. Antenna noise is the induced
continued

Propagation #10 *continued*

atmospheric and cosmic noise appearing at the receiver input.

(2) The signal-to-noise ratio of an ideal receiving system can be expressed as available signal-to-noise power = ratio of ideal system ideal available noise power. Where the ideal power available, noise power is the power developed across the antenna resistance by the thermal noise voltage. The available signal power at the receiver input is the power that the signal will develop across the input resistance equivalent to the antenna resistance. Noise figures usually are expressed in terms of power ratios in dB.

(3) The noise figure of an actual receiver is obtained from the following ratio:

Signal-to-noise power ratio for an ideal receiver / Noise figure = signal-to-noise power ratio for an actual receiver

(4) The required signal power at the input of an actual receiver is the required signal power for an ideal receiver multiplied by the receiver noise figure for the same signal-to-noise ratio.

(D) Types of Modulation and Service Gain - Other factors upon which the required signal strength of a receiving system depends are known as type of modulation and type of service gain. Higher signal-to-noise ratios are required in commercial high-quality broadcast work than in many other types of service including the amateur service. On the other hand, in general code systems, such as automatic high-speed telegraphy or teletypewriter systems, the output signal-to-noise ratio need not be large, since the mechanism operates when the signal exceeds the noise by only a small margin. The gain required for a certain type of service is the relative signal strength required for the type of communication as compared with the signal required for a reference type. This reference type of service corresponds to 90 percent intelligibility of speech and is comparable to the grade of service known as order wire in telephone communications.

This is the last of the IONO series I hope that you have enjoyed the series and perhaps found some helpful information. I am considering preparing a summary of the articles in paragraph form, for example:

"A.-- Ground-wave propagation refers to those types of radio mission which do not make use of ionospheric reflections."

With this last edition I will crawl back into my hole and not bother you anymore.

Good DX and C U in the PILE-UPS

JOHN FISHER K2JF

SURVEY SEEKS INPUT ON NOVICE/TECH PLUS HF SPECTRUM

The ARRL Novice Spectrum Study Committee is soliciting input from the amateur community on possible ways to optimize use of the present Novice and Technician Plus allocations on 80, 40, 15 and 10 meters. Survey results might form the basis for the ARRL to approach the FCC and request changes in the ways amateurs may operate within HF bands that contain Novice subbands.

The Novice Spectrum Study survey is available to ARRL members on the Web

<<http://www.arrl.org/members-only/NoviceSurvey.html>>.

Members will be able to complete and submit the survey only once. Nonmembers are invited to e-mail comments and suggestions to novicesurvey@arrl.org.

The committee--chaired by ARRL International Affairs Vice President Rod Stafford, W6ROD--has been examining the status and usage of the present Novice HF bands with an eye toward determining what changes might be needed now that the FCC no longer issues new Novice licenses. The survey offers members a chance to express opinions and preferences on various options--including leaving things as they are. Respondents are invited to add comments and suggestions before submitting the survey.

Some 40,000 Novice licensees remain in the current FCC database, and that number is dropping by some 6000 licensees each year through attrition and upgrading.

The Novice Spectrum panel will present an interim report at the July ARRL Board meeting, and a final report at the annual meeting next January.

- *Tnx ARRL Letter*

GCARC Officers

President - *Ray Schnapp WB2NBJ*
 Vice President - *Bob Budd KB2EAH*
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Wayne Wilson WA2LET

Gene Schoeberlein AA2YO
Bob Krukowski KR2U
Bill Blakeley WA2ADB

Happy Birthday

Congratulations to the following club members:

Paul Carr KB2TKV	7/20
Ray Flanigan N2WHL	7/21
Chris Kelly KC2PC	7/16
Bob Krchnavek K2DAD	7/11
John Logan KB2VSE	7/18
Lou Meceli WB2THM	7/22
Charlie Olinda N2SRQ	7/12
Art Strong KA2DOT	7/20
Dave Strout W2YC	7/17
Al Trueblood N2FJQ	7/4



Welcome to the New Crosstalk Editor

Gene Schoeberlein, AA2YO, has volunteered to take over the stewardship of this highly informative journal.

Everyone, please give Gene a round of applause!

Submissions may be directed to the new editor at:

Gene Schoeberlein AA2YO
401 Westwood Drive
Woodbury, NJ 08096

or

aa2yo@arrl.net

Submission deadline: 7/16/2001

Committees

Advertising - Open

ARES/RACES -Chick WA2USI

Awards - Jack K2ZA

Banquet - Bob KR2U

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Clubhouse Site - Al KB2AYU

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Hamfest - Bob KB2EAH

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Nominations - Bob KR2U

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Scholarships - Greg WN2T

Special Services - Open

Sunshine - Open

Technical - Open

TVI - John AA2BN

VEC Testing - Chick WA2USI

4-H Parking - Bob KR2U

The W2MMD Repeaters

147.78/18 Mhz - Pitman

223.06/224.66 Mhz - Sewell

447.1/442.1 Mhz - Pitman
(CTCSS 131.8 Hz)

GCARC Meetings

General Membership

8p.m. 1st Wednesday every month, Pfeiffer Community Center, Williamstown, NJ

Board of Directors

8 p.m. 3rd Wednesday every month, GCARC Club site, Harrison Twp. 4-H Grounds
~1 mile south of Mullica Hill on RT77

Nets

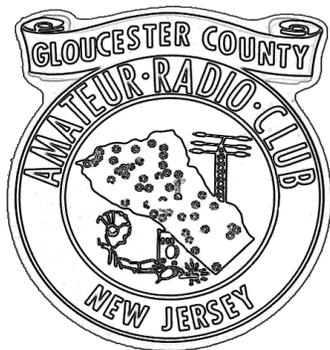
**ARES/RACES -
Sundays 20:00 Hrs
(147.78/18 and
223.06/224.66
repeaters)**

**10 Meter - Sundays
following the
ARES/Races Net
(28.350 Mhz)**

July Meeting Program

Socializing

stamp



P.O. Box 370
Pitman, NJ 08071

Mailing Label