



# Crosstalk

Issue #5

May, 2001

## President's Message



*affiliated club*



This message will have to be brief as I am writing it earlier than usual, before the board meeting.

There is some good news however, Lou Joseph W2LYL has volunteered to run field day this year. Lou will be in need of a considerable amount of help and information - Band chairpersons and operators. The club has always done real well and this year will be no exception.

The not so good news is that we still need a chairperson for the hamfest. Bob Budd is not able to handle it this year due to personal reasons so someone will have to step up to the plate and take this job on. I myself will give my support to whoever takes on the job. Last year I made up the flyers that John and Bob designed and I will be able to do it again.

The Battleship Radio Club is moving along and Joe N2XYZ has sent an article for crosstalk so I will let it talk for itself.

The generator is coming along OK but I am finding it more difficult to get things done due to my arthritis, however I will plug along and am hoping to have it at least ready to be used on field day if not as I had envisioned it. Any help would be appreciated, just give me a call.

Due to family circumstances I cannot be sure about the May meeting, I hope someone can take over if necessary if need be.

73,

Ray WB2NBJ

### 2001 DUES

GCARC dues for the year 2001 are now due. The annual dues are \$15.00. Please send your checks directly to the treasurer, Bob Krchnavek (K2DAD) at 50 Eastwick Dr., Gibbsboro, NJ 08026.

# DX Dope

*By Doug Gehring WA2NPD*

I was curious as to why it was necessary to have a "survey" trip to Mellish Reef, prior to the full-blown DXpedition in '01 or early '02. The weekly DX, W3UR's FB compilation, appears to have answered this query.

Bernie gives the dimensions of the Reef as 10 x 3 kilometers, which is roughly 6 miles by 1.8 miles, a fairly decent sized piece of real estate. Certainly, plenty of room for even a 160 m full wave rhombic - considering the nearest Burger King is over a thousand miles away. But then, the kicker! W3UR goes on to say that at high tide, the dimensions shrink to 300 meters by 6 meters, which is about two tenths of a mile by 20 feet!! Well, that's still room enough for, say, a full wave Beverage on 160, oriented, of course, in just one direction.

But, if that antenna were erected, where would they sleep and operate? They would also have to share that remaining space with the thousands of "permanent" residents; namely the hermit crabs, sand fleas, and sea birds. There was no mention of the elevation above sea level at high tide, nor of what happens when a squall passes by. Also, what is the increase in the tide during full moon periods? Certainly, the location of the generator would require some thought to ensure it would remain high and dry, especially during full moon nights. One thing in their favor is that the difference between low and high tide at about 17 degrees south latitude can't be all that great. Nevertheless, with greater than 99% of the land mass under water at high tide, the Reef must be a pretty flat island.

With conditions like that, it's easy to appreciate why some astute up-front planning would be desirable before bringing along 12 to 15 operators and perhaps or 5 complete stations and antennas. Looks like another Scarborough Reef situation! Well, maybe not that bad.

So, what's on the docket for this month? W3UR, in QST, reports that, even with the change to the metric system, Agalega will miss new country status by about 25 miles!

Station	Dates	Freq / Mode	Rarity	Country
3B6RF	5/2-5/18	All;All	5	Agalega Island
EM5QRP	5/4-5/11	Usual QRP Frequencies	3	Ukraine QRP
D70IAF	to 5/25	40-6;CW,SSB,RTTY	3	Korea
9Y4/N2IM	to 5/4	20-6;SSB,CW	2	Trinidad
V47UY	5/10-5/16	80-10;SSB,CW	2	Nevis Island
VP9/AI5P	4/29-5/9	WARC;CW,SSB	2	Bermuda
T88LJ	5/11-5/13	80-6;SSB,CW	3	Palau Island
TX0C	4/27-5/3	All;All / last chance	5	Chesterfield Island
VP8SDX	4/23-5/7	160-6;SSB.CW.RTTY	3	Faulkland Islands
3D2NV	5/4-5/7	SSB only	2	Fiji Islands

\* 5 is rarest

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

## Propagation #8

by John Fisher, K2JF

### IONO 8 USEABLE FREQUENCIES

#### Maximum Usable Frequency (MUF)

For any given ionized layer of fixed height and ion density, and for a transmitting antenna with fixed angle of radiation, there is a frequency (higher than any other) that will return to the earth at a given distance. This frequency is THE MAXIMUM USABLE FREQUENCY FOR THAT DISTANCE; moreover, it is always a frequency higher than the critical frequency because the angle of incidence is less than 90 degrees. Thus, for any given great circle distance along the earth, there is a maximum usable frequency which is the highest frequency that will be reflected from a given layer of the ionosphere and that will return to the earth at the great circle distance. In other words, the greater the transmission distance, the higher the maximum usable frequency. In selecting the proper operating frequency for sky waves which travel along a fixed radio path, the maximum usable frequency is perhaps the most important factor to be considered. If the operating frequency is above the maximum usable frequency, the wave is said to escape, since it then will not be reflected by the ionosphere layer but will pass on through. On the other hand, if the operating frequency is decreased below the maximum usable frequency in the daytime, the wave becomes increasingly attenuated, since in the high-frequency range, the lower the frequency, the more wave energy is lost through ionospheric absorption. Hence, it is usually desirable for transmission to occur on a frequency as near to the maximum usable frequency as possible. A direct relationship exists between the maximum usable frequency, the condition of the ionosphere, time, and the angle of radiation. Thus, it is possible to predict mean values of maximum usable frequency for propagation over any path for any time in any future months. Since the method of problem solution entails the use of world-contour charts and the use of complicated procedures, it is beyond the scope of these write ups.

#### Lowest Useful Frequency (LUF)

Absorption - The presence of ions in the upper atmosphere not only causes bending and the return to earth of a radio wave of sufficiently low frequency, but also causes part of the wave energy to be absorbed. This absorption process is also of great importance in the practical use of ionospheric radio transmission. During the day, absorption takes place mainly in the D region of the ionosphere. However, there is some absorption for frequencies near the MUF of the F2 layer because waves at such frequencies are retarded to such an extent that there is sufficient time for appreciable energy loss to take place in spite of the relatively small number of collisions. Such absorption is called DEVIATIVE ABSORPTION, because it occurs in conjunction with retardation, which causes bending of the waves.

Absorption which takes place even though the wave is not appreciably retarded is called NONDEVIATIVE absorption. The absorption in the D region is largely nondeviative.

Lowest Useful High Frequency (LUHF). At certain frequencies of transmission, radio waves penetrating into the ionosphere, primarily in the D region and in the lower portion of the E region lose some of their energy by absorption. Absorption is at a maximum for frequencies of about 500 KHz to 2 MHz in the daytime, and decreases for both higher and lower frequencies at night. Finally a frequency will be reached for any given sky-wave path where the strength of the received signal just

## Propagation #8 *continued*

overrides the noise level. This frequency is called the LUF. Frequencies lower than the LUF are absorbed to such an extent as to render them too weak for useful communication. It should be noted, however, that the LUF depends on the power of the transmitter as well as on the distance concerned. Thus the term lowest useful frequency may apply to either day or night transmission.

### Summary for Variable Frequency

Assuming constant ionospheric conditions a constant distance, and single-hop transmission, (dreamer aren't I) it can be said that ---

- (1) Frequencies considerable below the MUF will be attenuated greatly by nondeviative absorption.
- (2) Frequencies somewhat below the MUF will be reflected as ordinary and extraordinary waves, either or both of which may be attenuated greatly by deviative absorption.
- (3) Frequencies near the MUF will be reflected as ordinary and extraordinary waves, both of fair strength.
- (4) Frequencies at the MUF will be received in the greatest possible strength as one wave.
- (5) Frequencies above the MUF will escape and not be received, except as scattered waves (see IONO 6).

Note an important fact to be borne in mind is that radio waves of fixed radiation angle are receivable at distances greater than the skip distance, but that as the distance is increased appreciably, increases attenuation results.

Optimum Working Frequency - ion density of the ionosphere layers occur from day to day, and from hour to hour. Predictions on which the MUF's are based are made by averaging long-range observations and do not take into account these day-by-day fluctuations. Therefore, the actual upper limiting frequency must be selected at a value which will insure against the probability of the operating frequency becoming greater than the MUF for any a particular day. For the F2 layer, the optimum work frequency thus selected at approximately 85 percent of the MUF for that particular transmission path. The optimum working frequency for the combined E-F1 layer may be taken as the MUF, since the day-by-day variations in E layer ionization are small. Of course, if the LUF is nearly equal to the MUF for a given transmission, the optimum working frequency must be selected at a value consistent with both. During moderate ionospheric storms, communication often can be assured by operating at frequencies slightly lower than normal, since critical frequencies are usually lower than normal during these periods.

The next, IONO 9, will be on " Received Signal Strength"

C U in the Pile-Ups JOHN

## NJ2BB Scuttlebutt

### Battleship New Jersey Amateur Radio Station

The late news from the "Big J" is things are progressing well. The Weekly Saturday group between 10 and 20 Amateurs report for duty on board the ship. The group splits up in to various work groups. Over 800 cables have been entered into a database, and are in the transmitter room, Facon #1 & Facon #2, Radio central and antenna locations. This computer database has located many cables that will enable us to connect the ship's antennas to the amateur radio station. (You would not believe the size of hard line cable) This will work out great for the ham station, as we are not allowed to change any of the historic appearance of the ship. The amateur station has a back room off of radio central- a good location to explain the radio room and be able to operate our amateur equipment.

We are looking forward to a special event station on Saturday May 26th; this will be to commemorate the commissioning of the New Jersey and Memorial Day. We will be operating on general HF bands and will also be on 2 meters surfing repeaters. I know that there was some confusion about the date of the special event. It is now correct on the ARRL Web page. We will be looking for a good time and hope to work all of you readers.

There is still much work to be done before the ship will be ready for it's public opening. The Home Port Alliance needs help to catalog the many artifacts that they have and are still receiving. They would like the BNJARS group to power up some control lights in the gun mounts to give the appearance as being ready to operate. Another big item is the telephone system. A new phone control center has been supplied and telephone volunteers will be installing and repairing phones. If you are familiar with telephone equipment please volunteer. To volunteer go to our web page [www.qsl.net/bb62](http://www.qsl.net/bb62) and down load the amateur radio station application and send it in using the address at the bottom of the application. Come and have a great time working on the ship and meeting many new hams.

Till next month Joe Cramer, N2XYZ

## 2001 Dues Update

The following members have paid their 2001 dues. Thank you. If your call sign is not shown below, please send your dues to Bob Krchnavek (K2DAD) to maintain your membership in the Gloucester County Amateur Radio Club. Remember, our club can only be as strong as the members in it. Let's keep GCARC strong!

AA2BN	AA2WN	AA2YO	AA4N	AE2L
AI2B	K2CR	K2DAD	K2DX	K2HPV
K2JF	K2OWE	K2PQD	K2ZA	K3WIN
KA2DOT	KA2OSV	KB2AYU	KB2FRN	KB2GW
KB2JCQ	KB2RGX	KB2TKV	KB2VSE	KB2ZTL
KB2ZWK	KC2PC	KE2ES	KR2U	N2ASV
N2BK	N2CQ	N2DJN	N2FJQ	N2FKS
N2FNF	N2HYS	N2IMH	N2IMK	N2MR
N2PKF	N2SRQ	N2SS	N2SVN	N2URO
N2WRJ	N2WUO	N2WUP	NJ2B	W2LYL
W2YC	W3AB	WA2ADB	WA2DUV	WA2ED
WA2GFK	WA2IBZ	WA2LET	WA2MVU	WA2NPD
WA2QOY	WA2TML	WA2TRS	WA2USI	WA2VOY
WB2AOL	WB2DXB	WB2GSF	WB2NBJ	WB2OYQ
WB2THM	WN2T			

Michael Scanzello  
Daniel Damiano

### GCARC Officers

President - *Ray Schnapp* WB2NBJ  
Vice President - *Bob Budd* KB2EAH  
Treasurer - *Bob Krchnavek* K2DAD  
Recording Secretary - *Harry Bryant* AA2WN  
Corresponding Secretary - *Chris West* WA2MVU

### Board of Directors

*Chuck Colabrese* WA2TML  
*Lou Joseph* W2LYL  
*Wayne Wilson* WA2LET

*Gene Schoeberlein* AA2YO  
*Bob Krukowski* KR2U  
*Bill Blakeley* WA2ADB

## Happy Birthday

Congratulations to the following club members:

Walt Ashton WB2OYQ	5/22
Clyde Babb N2WUO	5/25
Edith Flanigan KC2BON	5/30
Carmen Inverso WA2TRS	5/25
Ginny Wallace KB2JCQ	5/28



## Job Opening - Crosstalk Editor

I guess it was inevitable, working at Rowan University, in the Electrical & Computer Engineering Department.

I have decided to pursue my Electrical Engineering degree, which means night school. Carrying two courses a semester won't leave me any spare time for anything, so I must, regrettably, inform everyone that the August issue of Crosstalk will be my last as editor.

However, I will still maintain the club web site, as that process is fairly well automated, and only consumes about 30 minutes a month.

Interested parties may contact me at:

aa2bn@arrl.net

**Submission deadline: 5/25/2001**

---

## Committees

*Advertising - Open*

*ARES/RACES -Chick WA2USI*

*Awards - Jack K2ZA*

*Banquet - Bob KR2U*

*Budget - Bob K2DAD*

*Clubhouse Site - Al KB2AYU*

*Constitution - Open*

*Crosstalk - John AA2BN*

*Database - John AA2BN*

*DX - Doug WA2NPD*

*Field Day - Tony KG2MY*

*Hamfest - Bob KB2EAH*

*Hospitality - Open*

*Membership - John AA2BN*

*Nominations - Bob KR2U*

*Publicity - John N2AWD*

*Repeaters - Chuck WA2TML*

*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)**

**May Meeting Program**

**Socializing**

stamp



P.O. Box 370  
Pitman, NJ 08071

Mailing Label