

Crosstalk

March, 1988

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CLUB REPEATERS

147.781.18

224.66/223.06

442.100/447.100 - PL 20

WINTER ABSORPTION

Recent research has produced a more detailed explanation of the cause of the wintertime increased absorption anomaly that results in periods of weak signals lasting a few days, and it's effects, as well as a method prediction.

The cause is not simple but basically it involves the arrival of particles, into the polar regions, during geomagnetic disturbances. These particles trigger a series of events including the ionization of nitric oxide (NO) and molecular oxygen (O₂) in the auroral zones, 60 to 70 degree latitude, north and south. This causes absorption and electron depletion in these regions for about three days.

Some two to four days later the heat which builds up from the reaction produces winds in the stratosphere that blow the neutral nitrous dioxide and heat to the west (in the northern hemisphere) and towards lower latitudes. This results in large absorption areas, 1000 to 2000 km in diameter, spreading south west from the north polar regions and affecting mid-latitude east west dx paths for the following five to six days.

The absorption develops in two areas on opposite sides of the globe. The regions in between often experience lower than normal signal absorption. as a result the earth is divided into four alternating bands of above average and below average

signal absorption. This pattern moves about 30 degrees per day, the equivalent of two, one hour time zones.

Geophysical scientists call the warm stratosphere accompanying the anomalous absorption "Stratwarm." WWV will announce the presence and location of a Stratwarm in the propagation forecast at 18 minutes past the hour.

If, during December or January, a high value 'A' index is announced, monitor WWV for the Stratwarm location. The complementary Stratwarm location will be on the other side of the earth and lower absorbing regions in between.

The higher signal strengths in low absorption regions yield good dx conditions. These regions move 30 degrees west per day and a globe or polar map is very useful for tracking.

John K2JF

DX

You name it and it is out there. The DX is all over the place and the DX people have been having a ball this last month. Well it is over for the CW contest and the ARRL SSB DX contest is coming up the full week-end in March (March 5-6). The contest period lasts for 48 hours starting 0000 UTC Saturday ends 2400 UTC Sunday. The ARRL Board of Directors affirmed the DXAC recommendations giving SORASD a new country status. This will make a lot of the DXERS happy..What's

country status. This will make a lot of the DXERS happy..What's coming up..Well we have Jim Smith (VK9NS) going to Baker-Howland Is,(KH1) and from there he expects to go to S9; VP8BNC is on So. Orkney IS; VK9L (Lord Howe Is) will be active starting March 20-28th 160-10 meters; PJ7 St. Maarten will be in the ARRL SSB contest. A lot of these fellows work 3.790 MHz at our sunrise, and then go to the high bands. 20-15-10 are wide open, with 20 staying open some late hours at night. 10 is getting real hot, so you NOVICE and TECHNICIANS get into this SSB contest and get yourself some DX points and pick up one of the awards..Here is a good chance for you the start on you way to DXCC. Get your feet wet, and with the rising solar flux and the equinox approaching, the DX is really going to start coming in on Ten. Let us see who will be the first of the NOVICE and TECHNICIANS to get DXCC on 10.

C U in the PILE-UPS

JOHN K2JF

PART 7 IONOSPHERE PREDICTIONS

By SOUNDING the ionosphere it is possible to predict for several months in advance the various important characteristics of the ionosphere above any point on the surface of the earth. Such predictions are useful in the selection of optimum frequencies for radio communication over a definite path at particular times.

SKY-WAVE PROPAGATION

GENERAL -Sky-Wave propagation refers to those types of radio transmission that make use of ionospheric reflections to provide signal paths between transmitters and receivers. A typical question in sky-wave propagation is whether the ionosphere will support (reflect) a radio wave of a particular frequency and whether the received signal will be strong enough at the receiver to be heard above the noise level present at the receiver.

SKY-WAVE TRANSMISSION PATHS

The many possible paths of radio waves from a transmitter to a receiver as transmitted by reflection from an electrically conducting layer of the ionosphere. Note that some of the components of the entire wave front, which in this case are assumed to be of too high a frequency for reflection by the ionized layer, pass on through and are lost in outside space, unless they happen to be reflected from some higher layer having a greater degree of ion density. Other components of wave, which are assumed to be

of the correct frequency for reflection from the ionosphere layer are returned to earth, and it is these components of the wave that provide communications. Note also that the SKIP DISTANCE is that distance from the transmitter at which the ion density of the layer will just support reflection. Note the distinction between the terms SKIP DISTANCE and SKIP ZONE. For each frequency (greater than the critical frequency) at which reflection from an ionosphere layer takes place, there is a skip distance that depends only on the frequency and the state of ionization. The skip zone, on the other hand, depends on the extent of the ground-wave range and disappears entirely if the ground-wave range equals or exceeds the skip distance.

a. SKY-WAVE MODES. The distance at which the wave returns to the earth depends on the height of the ionized layer and the amount of bending of the path while traversing the layer. Upon return to the earth's surface, part of the energy enters the earth, to be rapidly dissipated, but part is reflected back into the ionosphere again, where it may be reflected downward again

at a still greater distance from the transmitter this means of travel is hops, by alternate reflections from the ionosphere and from

the surface of the earth, may continue, and enables transmission to be received at long distances from the transmitter.

b. GREAT-CIRCLE PATH. The paths which the radio wave NORMALLY traverse in traveling from the transmitter to the receiver lie in the plane passing through the center of the earth and the transmission and reception points. The intersection of this plane

with the surface of the earth is the great-circle path between the transmission and reception points. Radio-wave transmission paths which lie in this plane generally are called, for brevity, great-circle paths. Frequently, however, waves do not follow paths confined to this plane, and this deviation is called non-great-circle paths. The part of the ionosphere which controls sky-wave propagation is the portion directly above the great-circle path. Waves can follow either the major arc or the minor arc of the great-circle path. For instance, radio waves emanated at New York City might travel cross-country, or westward to reach San Francisco, which would be along the minor arc of the great-circle path between these cities, or these waves might travel eastward, almost around the world to the same destination, which would be along the major arc. The two types of transmission called SHORT-PATH and LONG PATH transmission respectively.

c. FREQUENCY As noted previously in the discussion of the ionosphere, the higher the frequency of a wave, the less it is refracted by a given ion density. Thus, if the angle of incidence of the wave with the ionosphere is fixed and the frequency increased, the minimum distance between the transmitter and the point of return of the wave to the earth increases slightly.

d. INCIDENT ANGLES. For a radio wave of a particular frequency and for an ionized layer of a particular density of ionization, there is an angle of incidence of the wave, called the critical angle, at which the wave is reflected and returns to earth near its minimum or skip distance. It should be noted that the critical angle of a given wave sometimes is defined as the angle at which the wave is *propagated hori-*

zontally within the ionospheric layer and, therefore, does not return to earth. Note that at angles of incidence larger than the critical angle, the wave is not sufficiently refracted in the ionosphere and escapes into space. As the angle of incidence decreases below the critical angle, the wave returns to earth at decreasing distances from the transmitter until a point of minimum distance, the skip distance, is reached. Note the critical angle for a given frequencies not to be confused with the critical frequency for a given layer of the ionosphere. the critical frequency, as explained before, is the highest frequency a given density of ionization will return directly to earth when propagated at a vertical angle (incident at 90 degrees to the ionosphere).

The next part 8 will be on
MAXIMUM USABLE FREQUENCY
(MUF)- LOWEST USEFUL FRE-
QUENCY (LUF)

and some other OPTIMUM WORK-
ING FREQUENCY (FOT)

C U in the Pile-Ups

K2JF

PRESIDENT'S MESSAGE

by
K2JF

The worst of the very cold months seems to be over and now we enter into the beginnings of milder (but windy) weather. The equinox is about to come on us and that means very good operating conditions for this coming season. Once again I can say your Elected Officers and Board of Directors did a very good job in checking and rechecking the budget for this year and again they have come up with a balanced budget and I hope that it meets with your approval. It will be presented at the March meeting. The Budget Director is KB2COB and he did a very excellent job in looking over the entire program and his work gives a pretty balanced outlay. He will be asking for help for his committee. I wish to thank WB2CAK for his work in preparing the first budget and helping us out on this one. Talking about committees brings to mind the excellent suggestion that K2HPV made; To

shorten the business meeting he suggested, and I certainly approve, that all committee reports be put into "crosstalk." This way we will not have to take up over an hour on committee reports. It will give each of you a chance to read and digest the reports and then if you have any questions they can be addressed to the chairman of that committee for a reply. All the chairman of the committees are to be present at the meeting. All committees will give some form of a report. For instance; WA2SEA

can give a report like "There were 120 Two Meter check-in's and 75 Two-Twenty checks in for the month of xxxx, plus we had a drill." (Harry just- using you as a example the numbers were just picked out of the air). Remember N2HIS gives us his "dead-line"

date for "CROSSTALK" and all reports are to be in his hands by that date. Well a lot is happening that does not seem to surface. Lots of paper work is going on for various operations. For instance the submission of the plans for the septic tank to the De

partment of Health; the lease being submitted, and at this time i wish to thank K2RCH for his generous gift to the club for preparing that rather technical-legal document. It was a lot of work; also, the paper work on the "home-owner" type of insurance f

or the "site"; and other types of preparatory paper work so when the weather breaks we can really get going outside and get the "site" in operation. NJ2B had a very successful "HAMFEST" meeting at the site. To do a good job to make this coming hamfest the best he and his committee will need your help, so when they ask you for some help don't be bashful, lend a hand WB2OYQ and his gang are really in there getting set up for our special services in the various Walk-A-Thons, Bike-A-Thons etc. a Special Service Club we are considered as one of the best in south jersey and thanks to K2HPV for preparing the paper work for submission to ARRL.

Don't forget the next "Novice to General" classes start March 22nd over at Bellmawr under the excellent guidance of WA2VQG;

Also, remember the exams are given on the 3rd Thursday of every month and this month they will be given on the 17th.

Hope to see you at the meeting.
John K2JF

Nary a contribution spurred

Deadline for April issue: March 23, 1988

CONTEST CORNER

Upcoming contests:

ARRL International DX
SSB.....March 5 & 6
CQ Worldwide WPX (Prefix)
SSB.....March 26 & 27

When we hear the word contest (ital), we usually conjure up thoughts of competition--it's me against the world! But Amateur Radio contests are not just competitions. Very simply, they are sponsored to promote the use of amateur frequencies. Added benefits are the awards and other recognitions that come from contesting.

When all is said and done, though, in any given contest there are competitors and participants. In fact, in any contest there are probably more participants(ital) than true competitors.

I competed in contests for many years. I competed with the world (not too successfully, I might add). I competed with other club members for the highest ranking in QST listings or Crosstalk mention, and I competed with myself: always trying to get better scores or more contacts than before. In most contests these days, I am a participant--because I have become more of a collector than a competitor. I'm working on collecting states for 5 Band Worked All States. I'm col-

collecting states for 5 Band Worked All States. I'm collecting counties in two categories: one is in CW and the other is any old way to get the county. I started working QRP about four months ago, and during this time I have worked all states QRP CW, and 58 countries QRP CW. I got most of these states and countries by participating in contests. The state QSO parties are a great way to collect states, and the DX contests are the way to collect countries.

Most hams who work contests collect:

- Awards
- Foreign countries
- States
- Continents
- Grid squares
- Counties
- Scores

If you are any kind of collector, you should be participating in contests when it is convenient for you.

After participants, we have the competitors. They go all out. If a contest runs for 30 hours, they compete for 30 hours. If the contest runs for 48 hours, they compete for 48 hours. Pile up the QSO's! Work those multipliers! Nothing matters but the BOTTOM LINE!! What's my total score and did I beat everyone else? I DIDN'T?! Well I will next year. I'll put up a better antenna and get new finals for the rig!

And so it goes, contest after contest. Every weekend!! Some competitors, after years of competition, finally run out of steam: I should pay more attention to the family, it's getting more difficult to keep pushing all the time, competing is getting to be tough. Most competitors after a while become participants(ital). They don't give up the HUNT, they just go about it in a different way and with less fervor. The spark usually never completely dies, and competitors who have turned participants have

been known to come back. They pick maybe one contest a year and go all out...like the old days...the whole 48 hours. Get that score!! Get those contacts!! Then, when the big one is over and they have recuperated for a couple weeks, they settle back and participate in the rest of the contests, content to grab a state here, work a country there.

So, these are some of the reasons for working contests. And there are others. For example, some contests are competitions for clubs as well as individuals. Not only do QST or CQ list individual results, but they also list club scores from a particular club. That's why we show our club name on some entry sheets. It's good publicity for us in the ham world to compete in club competition contests. It helps us become a better Special Service Club, and let's face it: we do like to see the club name listed in the magazines. These club contests usually require a minimum of 3 log entries from members before they consider listing our club. They don't stipulate how many contacts have to be on these entries. So, if you have an hour or so to spend in a contest and only get 10 or 15 contacts, go ahead and fill out the entry forms and send them in. That way, your own call gets in the result listings in the magazines, and so does the club's name. Well, there's one more reason then: competing, collecting, and individual and club publicity. There are lots more, but I'm sure you get the point.

We will be listing scores in Crosstalk too when you submit them to me. And scores in 5 popular contests during the year are eligible for counting towards the MEGAPOINT(something really nice) award that is sponsored by your club. But that's for another month. Meantime, start giving thought to getting into contests to help you with your collecting and helping publicize the club's name. Gosh, it's easy to Work All States in a one weekend sweepstakes contest too, for example.

I'd like to publish some contests related questions because I'm sure there are many who have the same questions. So send them to me for inclusion in this column. Future columns will discuss HOW to contest, and descriptions of some of the contests. Let me know of other things you would like to see here.

Well, we have an ambitious program, but it is designed to get us on the air and help us enjoy it while we are there. If you don't understand it, you can't enjoy it. We hope to help you with that.

See you at the March meeting.
73, Herb, K2HPV

25 YEARS AGO

In March, 1963, interesting things were starting to churn the waters of Amateur Radio. Our older club members will recall that at this time, a General ticket was good for all modes, all bands.

A letter to the Editor of Crosstalk from Jack Layton, K2JKA, among other things, made several references to the fact that at this time, an Extra Class ticket served only to cover up a 9x6 in space on the shack wall. (This kind of thinking eventually led to Incentive Licencing.)

New frequency privileges for 160 meter operation became effective February 21, 1963. New SSB prohibition and reduction of power became effective April 15, 1963.

At about this period of time, the African country of Eritrea became Ethiopia.

Club dues for 1963 were \$4.00 if paid by the March meeting. After the March meeting, dues were \$4.80.

Call letter licence plates for automobiles were not available in 1963 in New Jersey.

The program for the March meeting was a Home Brew contest.

10 YEARS AGO

Ten years ago, the FCC imposed a freeze on the acceptance of

posed a freeze on the acceptance of applications for new club, military recreation, and RACES station licenses.

At this time, amateur repeaters were ordered to cease using WR call signs, and to change to regular call signs followed by /RPT or /R.

Twenty-one club members submitted logs for the VHF Sweepstakes for a club score of 58,427.

Della Parker, W2AFZ, was presented with a life membership.

John Fisher, K2JF, had a continuing article in this month's Crosstalk(ital) on radio wave propagation.

MARLA'S MUNCHIES by Marla Bozarth, N2DWR

Hi! With St. Patrick's Day around the corner, I thought that I'd pass on a recipe for Irish Potatoes. This is really an easy one to make because there is no baking involved. You can even get the kids involved with this one.

Irish Potatoes

1 box of 10X confectioner's sugar
4 oz. cream cheese
2 tablespoons cream or milk
2 teaspoons vanilla
7 oz. bag of coconut
Cinnamon

Cream the first 5 ingredients together. Roll the mixture into small balls. Then roll the balls in the cinnamon. ENJOY!!!

EDITORIAL LETTER(something nice)

At the February club meeting, Mike, N2HIS, the editor of your (ital) paper, made a request for articles for Crosstalk.

I have collected Crosstalk over the years, and have all the issues that were printed since 1962. Prior to 1962, I cannot accurately determine if there was any Crosstalk. You have to take into consideration

the fact that the club wasn't started until December, 1959, and had been in existence for some time before the advent of Crosstalk(ital).

But getting back to the point I'm trying to get across. You probably know that I write the articles "Crosstalk 25 and 10 Years Ago."

In the early years, Crosstalk (ital) was devoted almost exclusively to events that directly affected the club and its members. It is truly a facet of club history. Later on, we started to borrow news items from outside sources, and lost sight of some of the important things that were happening within our club.

If you have noticed, the "25 Years Ago" portion is usually more enlightening and informative than the "10 Years Ago" portion. I'm not putting down the prior Editors of Crosstalk(ital) for this situation.

If you want a running history of your club, you can only have it by contributing a few words now and then to Mike, so he can get it in Crosstalk.

How can the other 160 or so members of the club know what you are doing, how great Amateur Radio is, the problems you solved and the solutions to those problems if you don't tell us? You can't talk to every club member on the air or at club meetings, but you can in the pages of Crosstalk.

Take a few minutes and drop Mike a few lines, if you think you can't write (neither can I, but I try), call Mike on the landline and tell him your news. I'm certain he would write it for you.

73, Harry, WA2SEA

[Thank you for volunteering me so glibly, Harry! But he is right. I will be happy to make something you wrote sound better, but please, WRITE IT. I'm not good at taking dictation! - Ed.]

READ THIS!!!

Dues for all members until March 31st is still \$15.00. After that,, the dues escalate to \$20.00.

I'm sure you don't want to spend an extra \$5.00 for no reason other than being to lazy to get your dues in before the deadline. So, either send a check to the club's p.o. Box, or to Sonny Gutin, WB2DXB directly. Dues will be accepted at the club meeting too!

Remember! You have been reminded.

Sonny, WB2DXB

SWAP & SHOP

WANTED: AC power supply for Drake TR3. Please contact WB2OYQ.

CLUB EVENTS

MARCH 1988

SUN	MON	TUE	WED	THU	FRI	SAT
		1 10 METER NET 28.350 MHZ USB 2100 EST	2 CLUB MEETING 8:00 PM-???? WOODBURY VFW	3	4	5 ARRL PHONE DX CONTEST
6 ARRL PHONE DX CONTEST ----- H'FESTS-YORK, PA BELLE VERNON, PA ----- GCARC ARES NET 147.18/2000 EST	7	8 WIAW QUALIFYING RUN ----- 10 METER NET 28.350 MHZ USB 2100 EST	9	10	11 HAMFEST SPONSORED BY IRVINGTON ARC LIVINGSTON, NJ	12 IOWA & MAINE QSO PARTIES ----- SHORE POINTS ARC HAMFEST EGG HARBOR CITY
13 IOWA & MAINE QSO PARTIES ----- GCARC ARES NET 147.78/.18 FM 2000 EST	14	15 WIAW QUALIFYING RUN ----- 10 METER NET 28.350 MHZ USB 2100 EST	16	17	18	19 BARTG CONTEST ----- VA & WI PARTIES ----- BERMUDA CONTEST ----- H'FEST-DOVER, NJ
20 BARTG, VA, WI & BERMUDA CONTESTS ----- HAMFEST MONACA, PA ----- GCARC ARES NET	21	22 10 METER NET 28.350 MHZ USB 2100 EST	23	24	25	26 CD WW WPX SSB CONTEST ----- BALTIMORE ARC HAMFEST & COMPUTERFEST
27 CD WPX CONTEST ----- HAMFESTS- TRENTON, NJ BALTIMORE, MD ----- GCARC ARES NET 147.18/2000 EST	28	29 10 METER NET 28.350 MHZ USB 2100 EST	30 YL-ISSB QSO PARTY PHONE	31 LAST DAY OF REDUCED CLUB DUES* ----- YL-ISSB PARTY		

* SEE WB2DXB TO PAY DUES