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		No. 52 September 1984		
Contest Club	N	o. 52 Septer	nber 1984	
Contest Club President	Tom Frenaye	o. 52 Septer K1KI	nber 1984 203-673-5429	
<b>Contest Club</b> President VP-Activities Manager	Tom Frenaye John Dorr	o. 52 Septer K1KI K1AR	nber 1984 203-673-5429 617-663-3452	
<b>Contest Club</b> President VP-Activities Manager Secretary-Treasurer	N Tom Frenaye John Dorr Charlotte Richardson	o. 52 Septer K1KI K1AR KQ1F	nber 1984 203-673-5429 617-663-3452 617-562-5819	

Captain's Cabin

Tom Frenaye, K1KI

Though I haven't seen the complete details yet.

One is to see if we can put together a couple of

there will be an exciting new rule in the CQWW DX Contest this Fall. From what I've heard the new rule will encourage the establishment of 5-person teams in competition with each other. The details as I understand them are:

- 1) Each team is composed of five members.
- Each member of the team must enter the single operator category.
- 3) Separate teams for each mode.
- Each team must be composed of members from at least two continents.
- 5) The team must be pre-registered.
- 6) There will be awards to top team(s).

I still have a couple of unanswered questions which I hope to resolve before the next meeting but in the meantime, think about the possibilities.

This could be a great way to encourage more activity, and longer activity during the contest weekends. There are a couple of ways to approach the new rule. world-class teams and go for the top spot. Because of the differences in scoring potential here and from DX locations. a winning team will almost have to be composed of mostly DX members, and perhaps a couple of DXpeditions to the Caribbean. This means an all-YCCC big gun team will be left in the dust (I know, it's hard to swallow...).

The other approach is for intra-club or inter-club competition. The key in this case is to try to insure that everyone interested is able to be on a team, and especially so that teams know who their local competition is. Somehow it's more satisfying competing against someone you know who lives nearby than someone you've never met before. It shouldn't be difficult to find people to make up teams. except for the requirement to have teams made up of members from two continents (the minimum would be four YCCC members and one DX station).

#### Continued on Page 2

So, in preparation for the September meeting, the hard part is going to be to find interested DX stations. If you are already regularly talking with an active contester overseas, ask him/her to be on a team. Say that you'll come up with the rest of the team to make up a total of five. Or, if you want, organize a team with one member from each of five continents. The idea is to get <u>everyone</u> in the club on a team, and to see if we can improve upon our club score from 1983 (We finished #3, and a bronze medal just isn't a good measure of YCCC's talents).

One related subject - if you are going to participate on a team, please make sure you have paid your dues. The squeeze at the Boxboro meeting will be unbearable if you haven't coughed it up beforehand!

# YCCC Connecticut/RI Barbecue

Saturday September 15th starting at 3 p.m. at the QTH of K1RX, Mark Pride. Mark will provide the gas grill and beverages. Bring your own food for cooking or munching. Take I-84 to exit 26 (Route 70 in Cheshire), which is about nine miles east of Waterbury. From the East take 9 right onto Sumit Road. From the West, take two rights onto Sumit Road. Go 1/2 mile to 1130 Sumit Road, which is a gold cape with red shutters. Ask for the parking attendant. Non-YCCC members are encouraged to come and meet the CT/RI crew.

# The Traveler's Century Club Tom Frenaye, K1KI

Now that you've worked more than 100 countries, or perhaps joined the Honor Roll, here's a new goal -TRAVEL to more than 100 countries. Of course Lloyd and Iris are already way ahead of you, but you'll enjoy the challenge. The Traveler's Century Club is open to travelers who have been to 100 countries or more, and those less than 100 but on their way up. It costs \$100 to join and \$15 a year for annual dues (you didn't expect it to be cheap, did you?). Members receive a newsletter 2 or 3 times a year that reports of scheduled club tours and meetings and events held in various parts of the country.

There are more than 800 members, including a few who have been to more than 200 countries (just as DXCC has guidelines for what makes a country, so does the TCC). A recent trip was planned to the Mediterranean, with hopes of getting to visit Albania (they didn't).

For more details: The Traveler's Century Club. 8033 Sunset Blvd., Suite 9, Los Angeles, CA 90046 (714-925-1770) or ask KAIR who has received some information.

### **New DXCC Country?**

Eighteen miles southeast of Hawaii, the lava flowing from an underwater volcano is building a new island, according to National Geographic World. Its peak is now 8,000 feet above the ocean floor. It is not known whether it will count as Hawaii or as a new DXCC country, however it probably won't matter to most of us as the new island won't break the sea surface for at least 50,000 years. Et tu, Suitland?

### **Excess** Cargo

4 element 40 meter phased vertical array: includes ultraviolet-resistant guys with turnbuckles, new MFJ dummy load, Col-Atch-Co phasing harness and switching system, 6061-T6 aluminum with radials and 12" round radial distribution disks, all mounting hardware plus all stainless steel connectors. All less than one year old. \$450.00 Larry, K1UO 207-234-7175.

TS830S, VFO-230, 500 Hz cw filter (all mint) \$800. R820 Rcvr, TS820 w/o digital, 500 Hz cw filter \$800. R820 alone \$450 with 50 Hz cw filter. HW-8 (mint) \$100. Drake 2B receiver, 2 BQ Q multiplier (good condition) \$100. Phil, K3UA. Home: 412-262-2739, if no answer: 412-262-2196 Work: 412-262-7076

Telrex 20' mast 1/4" wall. Never put up. \$125. Bill, K1MM Home: 617-879-8290 Work: 617-864-5000

# September YCCC Meeting

Paul Young, KIXM

The next meeting of the Yankee Clipper Contest Club will be on Saturday, September 29, at the Sheraton in Boxboro, Mass. at 3:00 to 5:00 PM during the New England Division convention. Come early, as there will be a fleamarket, numerous exhibitors, talks, forums, etc.

#### Directions:

From the West, take the Mass Pike to I-495 North (or alternately take the Mass Pike to I-290 East to I-495 North. From the North or South, just get on 495. From Boston, you are on your own, as the directions won't fit here, and they probably made the streets one way anyhow.

Get off I-495 at the Boxboro/Harvard exit. This is about 6 exits North of the intersection with the Mass Pike, and 3 exits North of the intersection with I-290. Go East for a couple hundred yards. and turn into the Sheraton parking lot. Park wherever you (legally) can.

If anyone needs a place to stay on Saturday night, I live near the junction of I-290 and I-495, and have a guest bed and space for a few sleeping bags.

# DX Contests - Five Basic Rules Tom Frenaye, KIKI

1) Set a goal before you start. Make it a goal you aren't sure you can make.

 Stay on the band most likely to get European QSOs.

3) Always keep up-to-date multiplier sheets. If you call CQ 90% of the time, don't bother with dupe sheets until later.

4) Never stay on one band for longer than one hour.

5) Spend at least 5 minutes per hour looking for multipliers.

(and put YCCC on your log when you send it in!)

### Cheap Wire

#### Tom Frenaye, KIKI

Ever wanted to find a source of cheap wire for Beverage antennas? A look through the advertisements in QST, CQ, 73, and HR turned up a couple of sources but the most promising looked like the quarter-mile spool of Copperweld advertised by Texas Towers for \$30 plus postage. At 2.3 cents per foot it appeared to be a real bargain. Ten days later after the wire had arrived, I put up a nice listening antenna towards Europe for 80/160 this coming contest season. It seems to work quite nicely, so watch out!

# Floating

Paul Young, KIXM

Contest season is coming. I'm sure by now you all have your antenna work done - You know better than to wait until the windy days of October, right?

Tom Frenaye, KIKI, is running for ARRL New England Division Director. As a former ARRL employee, and indeed a former contest editor. Tom is very familiar with how the ARRL works. Tom is a well known and respected contester and DXer, and, of course president of YCCC. Give him your vote at election time! A close look at the wire (#18 steel, copper coated) and I began to wonder if it really was Copperweld. The copper coating was rather thin, though it could be soldered to quite easily. After a letter to Texas Towers (and some prodding from the ARRL), it turned out it wasn't Copperweld after all. Texas Towers said they would discontinue carrying and advertising it in the future. It was too good to be true - but it did work for my needs - though how long the thin copper coating will hold up I don't know.

In any case, so far so good. If you do want some strong, cheap, copper-coated wire for Beverage antennas, check your local Agway (hardware/feed) store - they are all over the country. They sell the same quarter-mile spool of #18 copper-coated wire for less than \$20.00 - as electric fence wire. They also have non-copper coated wire if you are a gambler.

### An Exchange of Letters

Reprinted by permission of Fred Hopengarten, KIVR

May 22, 1981

Jim Lawson, W2PV 2532 Troy Road Schenactady, NY 12309

Dear Jim:

You have often been asked, "What is the best antenna height?" Sometimes you are asked, "What is the minimum effective height?" This letter asks allied questions, but for a very different reason.

The Town of Lincoln has a few townsfolk who are up in arms on the subject of antenna height. A member of the Planning Board recently asked me: "Why shouldn't we limit height to 50 feet? You'll still be able to talk to Japan won't you?" The question requires a serious answer.

It seems to me that laymen think of communications only in terms of range, without concern for reliability. To set that aright, a bit of presentation before the Board on the question of height will be necessary.

What I would like to do is show that with an antenna limited to 50 feet, the reliability of his communications would have been hurt. Your October 1980 HR article concludes generally that optimum height for 20 meters is about 1.5 wavelengths. That's about 100 feet at 14 MHz for angles 3-17 degrees. For 7 MHz, angles up to 30 degrees are important, so a good height looks to be around 130 feet. I would like to argue that heights below 70 feet cause a drop-off in reliability, and that acknowledged optimum heights hover in the 100-130 foot area. To avoid the fear that hams will erect 250 foot towers, I plan to submit an affadavit from the ARRL that it knows of no ham tower higher than 225 feet, and that one at 200 feet is considered exceptional.

graph would also show no significant improvement at heights over 140 feet. I would then create a cost vs. height graph to alleviate the fears of townspeople that some idiot might go to really extreme heights. After that I will refer to the need for FCC clearance above 200 feet, and FAA clearance within 3.8 miles of an airport runway.

I'd also like to show that 2 meters requires some decent height to cover all of Eastern Massachusetts in an emergency. I believe that the rule of thumb in VHF is that effective coverage is line-of-sight plus 33%.

In your *HR* article, you cited an Ascension to England study. Are you perhaps aware of other research on reliability vs. height? If not, can you suggest a methodology for reaching the same purpose?

This matter won't come to a head until the fall. So it can be done right. I have been in touch with Dave Sumner, K1ZZ, who says that if it can be done right somewhere, the League might like to bottle it and sell it nationwide. At the least, I hope that you will see the need to address the issue, because a lot of of well-meaning hams have been forced into this corner, arguing that good communications--not just range--requires reasonable height. Unfortunately, they have only had the gut feel of Sam Harris' famous dictum to guide them: "If your antenna stayed up last winter, it wasn't high enough."

In other words, I would like the Town to know that low heights are bad, but unlimited heights are not necessary. I wish to reassure the Board that another Eiffel Tower is neither necessary or likely.

Frankly, Jim, if I had my 'druthers, I'd like a graph showing rapid fall-off of reliability of communications over a path selected to show maximum drop-off, for antenna heights below 70 feet. The Any thoughts on how a punchy, reasonably short, but authoritative paper (argument) for public presentation could be put together? Would you be willing to lend the prestige of your former title at GE to such an effort?

Will you help?

Sincerely,

Fred Hopengarten, KIVR

P.S. Warm personal regards to Molly.

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2532 Troy Road Schenectady, New York 12309 June 18, 1981

Fred Hopengarten, K1VR RFD 1 Willarch Road Lincoln, MA 01773

Dear Fred:

Your letter of May 22 regarding the practical effects of antenna height raises an issue that is very hard to fully answer. It is my view that communications "reliability" is adversely effected by any predetermined limitation. We all operate under Federal laws which specify frequencies, transmission modes, transmitter power limits and antenna height limits (FCC and FAA). It is also necessary to conduct all operations using accepted technical engineering design to insure "clean" signals with a minimum of interference to others. It should be recognized that these Federally imposed specifications and limitations do in fact limit the attainable "reliability" of ionospheric communications; it is obvious for example that higher power (say 10KW) would more easily "get through" under poor band conditions.

Any locally imposed limitation will further restrict communications potential capability! Local Let me now turn to the question posed by your Planning Board member: "Why shouldn't we limit height to 50 feet? You'll still be able to talk to Japan won't you?" The real answer is, "Of course, but not very well!" There are many analogous questions that might help to understand the necessarily rather vague answer:

 "Why not limit auto speeds in towns to 15 mph? You'll still be able to go anywhere in town won't you?"

2. "Why not limit (for energy reasons) a maximum of one small window on each residential wall? You'll still be able to see anything outside won't you?"

3. "Why not limit the height of all <u>commercial</u> BC radio stations to 50 feet? They will still be heard by most of the presently served population won't they?"

Note that limitations rarely <u>prevent</u> the function from being performed at all, but they do adversely affect the quality and effectiveness of performance. I think antenna height limitation is quite similar - the quality, effectiveness and reliability of potential HF communications is adversely affected by <u>any</u> height limitation. In the absence of any externally imposed limitation. I think amateur radio operators tend to limit their own antenna systems for only one reason - cost! The cost-benefit equation <u>differs</u> from individual to individual, but because of the noncommercial nature of amateur radio. I do not feel it likely that systems will be built on a scale larger than that in current use.

ordinances are usually imposed for two basic reasons - public safety and aesthetic appearance. The public safety aspects of amateur antennas should be negligible as long as good mechanical engineering design is required and presumably specified in town construction building codes. (I would personally welcome a practical engineering code in town construction permits because I would like to insure safety not only for town neighbors but for the amateur himself!). The aesthetic appearance of antenna systems is unfortuneately very subjective and not, in my opinion, amenable to logical analysis. Aesthetic objections to antenna systems arise from time to time and involve not only maximum height but the physical size and number of mounted Yagis and the extensiveness of the total installation. You and I know that the most effective HF antenna system involves a number of big Yagis usually mounted on more than one tower and at heights that will probably exceed the aesthetic models that most town planning boards will accept.

It is true that my October HAM RADIO article showed that the "best" height for a 20 meter Yagi is about 100', but it is far too simplistic to argue that a limitation of 100' imposed on an antenna system would not cause a drop in reliability! My November HAM RADIO article showed that stacked Yagis require greater mast height and that increased performance through flexible excitation modes is available only if the top height is very high. In fact for some very low angle path conditions heights of up to 3 wavelengths can be viewed as beneficial. The super-high antenna will always be technically superior for some ionospheric path. i.e., very low propagation angles and near the MUF limit. Again I repeat that the only reason every amateur would not wish such an extensive and flexible system to improve his basic communications capability is his own cost-benefit equation!

You suggest that "acknowledged optimum heights hover in the 100-130 foot area"; I can accept such a statement <u>only</u> if a <u>single</u> Yagi is used on 20 meters <u>and</u> if angles up to 17 degrees are necessary. For very long communication paths, e.g. Japan, lower angles and hence higher antennas would in my view be superior.

You can now appreciate that I know of no valid way to construct the "reliability graph" which you long for. In fact the research required to obtain it does not exist; note the third point on the right hand side of p. 41 of my December HAM RADIO article!

I do have one suggestion to you in which perhaps Dave Sumner might be very helpful. Contests do provide a pretty reliable measure of communications potential; while it is true that operator skill is a vital factor, it might be an interesting exercise to analyze the antenna systems for the most effective stations and compare scores with stations limited to lesser systems. Such results would be reliable (good data already exists), and I believe both instructive and convincing; and there is also time to make the analysis before your Fall deadline. I suspect the outcome of such an analysis will likely show that the communications effectiveness increases monotonically with the maximum system height and with system complexity and flexibility!

#### At this stage I can not suggest how to write a

#### Post script

With the help of John Solman, WA9AMZ, an engineer at Lincoln Labs, we did indeed contruct the graphs mentioned in my initial letter. They are attached as exhibits I and II.

We did go ahead with a presentation that fall. I'd like to say that the persuasiveness of our argument was pre-eminent. However, eventually the subject just died away for lack of interest and our by-law has not been amended.

Nonetheless, it is certain that the level of effort that local hams put into the presentation was impressive, and that our arguments were cohesive. Our presentation was backed by an extensive collection of documents and slides, as well as a collection of local zoning ordinances from towns where everyone could agree that the existing permissive ordinance had not caused property values to fall.

Copies of the presentation documents are available for \$10.00 (to cover the cost of copying and mailing).

Fred Hopengarten, KIVR

"white paper" for public presentation. I agree with you that it is a vital subject for amateur radio, and I promise to give it more thought. Incidentally, while personally anxious to give constructive help, I do not wish to use any of my former G.E. titles in this connection; I shall act simply as a technical individual contributor.

> With best regards, James L. Watson, W2PV

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P.S. Molly also sends best wishes.

P.P.S. It is amusing to note that the only serious town argument <u>against</u> high towers is the argument of poor asthetics; remember that the Eiffel Tower to which you refer has always been considered a <u>positive</u> aesthetic structure!



Exhibit I: Gain in decibels at angle a

10.1



### **Open Letter**

#### TO:

Members of PVRC, YCCC, Murphy's, TDXS, NTCC, Mad River Radio Club, and any other contest club.

#### FROM:

N6TV, Vice President/Contest Chairman, NCCC

"Maybe it's time to whip up a little enthusiasm for club participation in the 1984 SS ..." -- N1CZC and K1WJ, May 1984 QST.

#### Dear Friends:

Last year, for the second year in a row, PVRC won the "Unlimited Club" competition in the ARRL SS. Fine job. Each year they were the only entrant.

The Northern California Contest Club, after achieving great success in the past three CQ World-Wide Contests, has decided to return some dignity to the Unlimited Club competition in the 1984 Sweepstakes.

The Northern California Contest Club hereby announces that it will ship one case of fine California champagne to any club which wins the Unlimited Club competition in the 1984 SS, provided that club also offers, in an open letter, to ship a native food or drink of similar value to the NTCC if we win. The open letter should be published prior to September 30th, 1984, and the offer must be formally accepted by the NTCC.

# An Evening with 9N1MM Jack Schuster, W1WEF

The Connecticut DX Association is sponsoring an evening with 9N1MM on Friday, October 19, in Bloomfield, CT. Father Dave Moran will give a slide presentation on Nepal, and refreshments will be served. The gathering will be at the Sacred Heart Church meeting room, 26 Wintonbury Avenue in the center of Bloomfield. A small donation will be collected to help defray expenses. Come on down and thank Father Dave in person for that rare multiplier!

# West Coast 160 Meter Bulletin Tom Frenaye, KIKI

Those of you particularly interested in 160 meters may want to look into The West Coast 160 Meter Bulletin, published by N7CKD. Now in its second year of publication, there are about 200 subscribers. It costs \$9.00 a year but the literature doesn't

We will accept any offer provided: (1) the food or drink is deemed of equal value, and (2) the challenging club agrees to ship the prize within thirty days of publication of the results in QST. Accepted offers will be published in the October 1984 issue of THE CONTEST JUG.

The food or drink should be appropriate for consumption at a club party, so that all members of the club can share in the spoils of victory.

We're looking forward to hearing from you.

73.

Robert A. Wilson, N6TV VP/CC. NCCC

NORTHERN CALIFORNIA CONTEST CLUB 34456 Coleville Place, Fremont, CA 94546 (Reprinted from the NCJ.) make it clear how often it comes out (6 times?).

A recent issue had useful information on active 160 DX stations, loop antennas, DX frequency allocations, and Beverage antennas. If you have any interest, send a large sase (with 40 cents postage) to:

Dennis Petersen, N7CKD The West Coast 160 Meter Bulletin 4248 A Street, Space 609 Seattle, WA 98002

## **Propagation Predictions**

Matt Power, KAIR

Most of the simpler procedures (whether computerbased or not) for predicting HF radio propagation conditions use the so-called control point method. For a given propagation path between two stations. all control points are located along the path, in between the two stations. If the path is less than 2486 miles (4000 km) in length, the path midpoint is selected as the only control point. If the path is more than 2486 miles, two control points are selected, each located 1243 miles away from one of the stations. The control point method holds that ionospheric propagation conditions along the given path are determined by conditions at the control points. These conditions are often represented by two values, the MUF (often the 4000 km maximum usable frequency) and the LUF (lowest usable frequency). In the two control point case, the path MUF and path LUF are defined to be the lower control point MUF and the higher control point LUF, respectively. A typical procedure will require you to know the latitude and longitude of the two stations (the path endpoints) and enable you to calculate the path MUF and path LUF for any date, time, and sunspot number.

This seems fine for point-to-point communications. In the CQ WW contest, however, your 5905 report will be accepted in 315 countries throughout the world, so it might be helpful to have a prediction format which shows propagation conditions to all parts of the world simultaneously. One such format is a world map upon which is printed the value of the MUF at selected points (perhaps by a set of frequency contours). A great number of such maps were previously published by the U.S. Department of Commerce in a report called OT/TRER 13 (see March 1972 QST. p. 14). One drawback of these is that they are not great circle maps centered on YCCC territory, and thus do not conveniently organize the geographic areas of band openings in terms of azimuth (i.e. beam heading). There are a variety of ways to go about making maps in the great circle format which show MUF data. For example, K1KI suggested (June 1984 QST, p. 56) that frequency contours could be plotted using the MINIMUF-3.5 program. The most direct approach to this would be to start by modifying the program so that, for a given value of the MUF, it would generate a set of points having that MUF value.

MINIMUF program slightly, so that I could enter the location of a control point by specifying its direction and distance from the center of YCCC territory (about 42.031N, 72.223W): MUF values at 336 points were found, and some of these points connected with estimated contour lines, in order to draw the map shown here.

This map is applicable to 2200Z on October 27 (approximately our sunset during CQ WW SSB), with a solar flux of 100 (sunspot number of 46.9). The area with horizontal shading (one covers most of Eurasia and the other covers part of eastern Antarctica and the south Atlantic) shows the places where the MUF is between 7 and 14 MHz. The areas with vertical shading (such as east Africa and northern Canada) are where the MUF is between 14 and 21 MHz. The unshaded area (including most of the U.S. and the entire outer border of the map) corresponds to MUFs between 21 and 28 MHz. The places within the area of diagonal shading (including most of South America and the Pacific Ocean) have MUFs above 28 MHz.

The MUF value shown for any point on this map is, for most cases, exactly the same MUF value that you would obtain by running the unmodified MINIMUF program for a path to a station 1243 miles beyond that point. Thus, the information shown is just as accurate (and just as inaccurate) as the MINIMUF program itself. There is one exception, however. MINIMUF calculates MUFs assuming the path is confined to one hemisphere, and multiplies them by 1.2 if a transequatorial route is being used. Southern hemisphere MUFs shown on the map are already multiplied by 1.2, but the MUFs at control points near YCCC territory also must be multiplied by 1.2 in case they are the limiting factor. MUFs at points 1243 miles away from the map center are shown in the table below. For example, the MUF at any 1243 mile distant point whose direction from the center is between 15 degrees and 90 degrees (i.e. generally northeast) is between 7 MHz and 14 MHz.

A sample map is shown in Figure 1. In drawing this map, however, I did not follow the direct approach described above. Instead, I only modified the

NORTHERN HEMISI	PHERE PATHS		
Range of directions	MUF range		
15 to 90	7-14		
90 to 135	14-21		
135 to 300	21-28		
300 to 15	14-21		



Figure 1: MUF map for 27 OCT 1984, 2200 UT, solar flux = 100

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TRANSEQUATORIA	L PATHS
range of directions	MUF range
15 to 75	7-14
75 to 120	14-21
120 to 150	21-28
150 to 285	28+
285 to 330	21-28
330 to 15	14-21

Since the MUF figures given above are the first limiting factor for the path MUF, they have some value by themselves in providing a first approximation of what directions a band is open in. The second limiting factor is, of course, the MUF at the point 1243 miles closer than the other station (assuming he is a distant or "DX" station in the sense that he is more than 2486 miles away). Incidentally, an MUF range of 21-28, for example, does <u>not</u> mean that the 28 MHz band is open in that direction. It indicates that the MUF is high enough so that 160, 80, 40, 20, and 15 will be open, but that 10 meters will not be, since the MUF is somewhere below 28.000 MHz.

You may be thinking that 160 meters isn't open to the west at 2200Z, and you're right. This brings up the subject of the lowest usable frequency. The area of the map shaded by x's, which wasn't mentioned before, is not an MUF region at all. In fact, this area (which is mostly within the 28 + MHz MUF region) contains the places where the LUF is likely to be between 14 and 21 MHz. This means that signals on 20 meters or any lower band will experience enough absorption in the ionosphere's D-layer to effectively render the communications path unusable. A separate procedure was used to find this LUF region, since the MINIMUF-3.5 program does not calculate LUFs. map showing what areas of the world each band was open to. The reason I didn't do this is that it isn't necessary to apply the control point method in a strict manner. For example, a control point 1243 miles east of the map center will have an MUF of 13.8 MHz, which would suggest no openings to the east on 20 meters. However, if it is assumed that the control point could be slightly closer than 1243 miles, the map would then show 20 meter openings to all of central Africa and even around to VK/ZL via the long path. Of course, the control point could also be moved <u>farther</u> away, decreasing the likelihood of African openings.

If we do not accept this propagation to Africa, though, 20 meter openings to almost all areas of the world (except Eurasia) are indicated on the map. On 10 meters, the band would be open to South America and the south and central Pacific. Notice the difference that the transequatorial correction makes. No 10 meter openings to northern hemisphere areas are displayed on this map. Obviously there isn't an actual MUF discontinuity at the equator, but that's the MINIMUF approximation. For the 15 meter band, openings to those same areas mentioned for 10 meters are apparent, and, in addition, propagation to the northern Pacific, VK4/VK5, and ZD8/ZD9 would be possible. Since beam heading information can also be obtained from the map, you can immediately see what range of beam headings might be useful when CQing or tuning for multipliers on a particular band. For example, you might want to listen on 15 meters with your beam pointed northwest, but this probably wouldn't be productive on 10 meters.

Areas where the LUF is between 0 MHz and 14 MHz exist somewhere on the map, but are not shown. The reason for this is that LUFs depend on your transmitter power and antenna, and I was unable to find an approximation which would account for the great differences in low-band antennas used by various YCCC members. Areas where the LUF is above 21 MHz do not exist on the map; thus, absorption should not be a limiting factor for communications on 15 meters or any higher band.

At this point, it would be reasonable to question why it is necessary to consider these limiting factors <u>after</u> the map has been drawn. After all, I could have gone one step further and simply drawn a Just as MUF information can be helpful in suggesting an appropriate direction for your beam antenna, it might also be used to suggest what height the antenna ought to be situated at. It is well known that the gain, at various vertical angles, of an antenna above ground is affected by the height over ground. In Scuttlebutt 36, N4KG and K1GQ included a graph entitled "Maximum Wavelength vs. Critical Frequency and Operating Frequency". Maximum usable frequencies shown on the graph appear to be 3.37 times the critical frequency values. Thus, when the MUF is known, a value of the maximum usable wavelength can be obtained for each amateur band. Obviously, the maximum wavelength must become greater as the operating frequency increases. and must reach a value of 90 degrees when the operating frequency is equal to the critical frequency. The equation:

$$Wm = \sqrt{\frac{\cos^{-1} 1.047 (1-(Fc)^2)}{Fo^2}}$$

Wm = Maximum wavelength Fc = Critical frequency Fo = Operating frequency

seems to produce the above mentioned graph. This information can be used to select an antenna system having substantial gain at vertical angles below the maximum waveangle, and (if possible) minimal radiation at vertical angles well above the maximum waveangle. For example, if the highest daytime MUF to Europe was expected to be 22 MHz, low 15 meter antennas might not produce favorable results.

Clearly, the point of this article was not to better prepare you for the sunset opening during CQ WW SSB. The point was to suggest that MUF maps might be of some use. You may feel that long experience is the only way to know band openings. However, some people feel that the better MUF/LUF programs available today can help to reinforce this "long experience". Unfortuneately, MINIMUF-3.5 is not one of the better programs; it is one of the worst. I would therefore encourage those who have obtained the better programs to construct accurate MUF maps, and compare these to their own operating experience.

# Lots of Pretty Stamps for DX QSLing! Tom Frenaye, K1KI

I recently ran across something too good to be true (as usual). I found a way to buy mint US postage stamps at <u>below</u> face value! You are correct when you say it wasn't at the Post Office.

It seems that when stamp dealers buy stamp collections from people, or get them through estate settlements, they don't always have the time to deal with the most common commemoratives and non-plate block stamps, so what they will often do is to sell them in bulk at 90 cents for \$1.00 of face value, just to get rid of them!

While dealers don't always have stamps available in this manner, a little shopping around may lead you to some real bargains. In the Hartford area, I've found two dealers that sometimes have these odd lots of commemoratives available - one wants a minimum of \$90 while the other will deal in smaller quantities. Usually they want to deal in lots of \$100 - so maybe you could get together with a few others.

You may wonder just what you do get in these odd lots of commemoratives - the last two groups I got included several of:

### **New England DXCC Dinner**

The 35th annual New England DXCC Dinner will be on November 10 at the Concord Lodge of Elks in Concord Mass. There will be an afternoon and an evening program. The program will include a talk by Fred, K3ZO (also known as HS1ABD and HK3NBB), and videos of the Laccadive DXpedition and of XU1SS (Cambodia). The videos should also be interesting to non-hams. so you may want to bring your spouse. Cost is \$2.00 for the afternoon, and \$14.95 for the evening, which includes a family style dinner. Contact Steve Tolf, K1ST, 12 Phylmor Drive, Westboro MA 01581 for more information. 15 cent Viking Mission to Mars
10 cent US Bicentennial-Bunker Hill
10 cent VFW 75th Anniversary
10 cent Pioneer-Jupiter
13 cent Clara Maass
13 cent Clara Maass
13 cent 50th Anniversary of Talking Pictures
13 cent Olympics - 1976
10 cent Christmas - Currier and Ives
?? cent Christmas - 1975
10 cent Bicentennial-Carpenter's Hall
13 cent Alexander Graham Bell
10 cent Benjamin West
4 cent Arctic Explorations - 1959
4.5 cent White House (1930's?)
.5 cent George Washington - 1932

One thing to note - for overseas mail you may have to really load up the envelope with a lot of stamps to make up 40 cents for airmail. The Scuttlebutt is the newsletter of the Yankee Clipper Contest Club and is mailed about nine times per year to all paid up members. Dues are \$10 per year, payable 1 April with a grace period through 30 June. Non-members may subscribe to the Scuttlebutt by sending \$10 to the Treasurer: Charlotte Richardson, KQ1F, 11 Michigan Drive, Hudson, MA 01749. Subscribers who subsequently become members will be credited as having paid dues.

The Yankee Clipper Contest Club (an ARRL Affiliated Club) holds four official meetings per year, on Saturday afternoons in March/April, October (at the New England Division Convention when possible), November/December, and January/February. Attendance at an official meeting is <u>required</u> in order to become a member. Club members congregate on 3830 Khz Monday evenings; many routinely monitor this frequency other evenings as well.

Rosters are mailed to all paid members each summer. For more information and/or assistance, contact the area manager nearest you on the following list:

Area	Call	Name	Home	Work
CT/RI	K1RX	Mark Pride	(203) 271-3096	(203) 265-8825
EMass	W1FJ	Al Rousseau	(617) 598-3744	(617) 599-7500x173
WMass	WIGG	Gary Gaudette	(413) 443-3404	(413) 494-4047
VT/NH	KMIC	Bill Pedersen	(603) 673-1678	
ME	K1SA	Bernie Cohen	(207) 773-6589	(207) 797-3585
NNY	K2RD	Ira Stoler	(518)-439-5804	(518) 445-8474
SNY/NJ	K2EK	Bill Gioia	(914) 221-1672	(212) 888-2102

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FIRST CLASS

# **Special Convention Issue**