Yuba-Sutter Amateur Radio Club, Inc.

A California Non-profit Organization
P.O. Box 1169
YUBA CITY, CALIFORNIA 95991

April 85

NEWSLETTER

PRESIDENT'S MESSAGE

Over the last year it has been my pleasure to serve in the office of club president. I have been active in everyone of the five previous clubs in which I've been a member and I am happy to be active in this one. When I accepted the offer of the Board of Directors to become club president, it was with the knowledge that I would have a lot of support from all of you, and you have not let me down. I want to thank you all for the way you have helped me and the club this past year.

Since taking the job, I have had a big increase in the demands on my time in Air Force responsibilities as well. As a result, I have missed a board meeting or two and have has less to say about when I can take time off from work. So to get down to it...I will request that the Board of Directors appoint a new president for the coming term.

Election of Board members will occur at the next meeting. While the present board has done a fine job, that doesn't mean that they all want to remain on the board or that no new members (and ideas) are in order. If you are a member in good standing and want to give Board member ship a try, just say so. Nomination is that easy.

Again, THANKS FOR ALL THE HELP!
Ron, WB5FIX

BIG BROTHERS/SISTERS FISHING DERBY

The Yuba-Sutter Amateur Radio Club has been asked to provide communications for the Big Brothers/Sisters Fishing Derby Saturday, April 13, at Ellis Lake in Marysville.

Our role primarily will be to provide an administrative link between derby headquarters in the AAA parking lot at 13th and D streets and four other locations around the lake.

We will operate the derby net on 147.45 simplex.

The derby begins at 9 a.m. and runs till 4 p.m. Several hundred trout will have been planted in the lake, some of them with special numbered tags attached that can be redeemed for prizes. ONE WILL BE WORTH $10,000.

Anyone catching a tagged fish will be asked to contact a radio operator to relay tag information back to derby headquarters where a running tally of prizes won will be kept. That person also must take the fish to derby headquarters by 4:30 .m. to actually claim their prize.

The four radio locations will be near food booths operated by Big Brothers/Sisters. We have been asked to keep an eye out for problems and report any to headquarters.

Several hundred people are expected to take part and the other primary task we'll have is to

See Page 2, DERBY

MEETING TUESDAY

The April meeting of the Yuba-Sutter Amateur Radio Club will be held at 7:30 p.m. on Tuesday, April 9. **THE MEETING WILL BE IN THE TEACHERS' LOUNGE AT YUBA CITY HIGH SCHOOL!** The lounge is located in the school's cafeteria building off the Park Avenue parking lot. Ya'll come, and bring a friend.

NET CONTROLS

The Y-SARC conducts a regular net every Monday at 7:30 p.m. on 146.085/685, the WD6AXM repeater. Swap shop, ham help and rag chew sessions are included along with official ARRL bulletins and words of wisdom from the president of the Y-SARC.

Net control operators through April are:

April 8 Jerry, N6DDP
April 15 Loyd, WA6AGD
April 22 Clarence, W6GCM
April 29 Ron, WB5FIX

OFFICERS, BOARD OF DIRECTORS

President	Ron Murdock, WB5FIX
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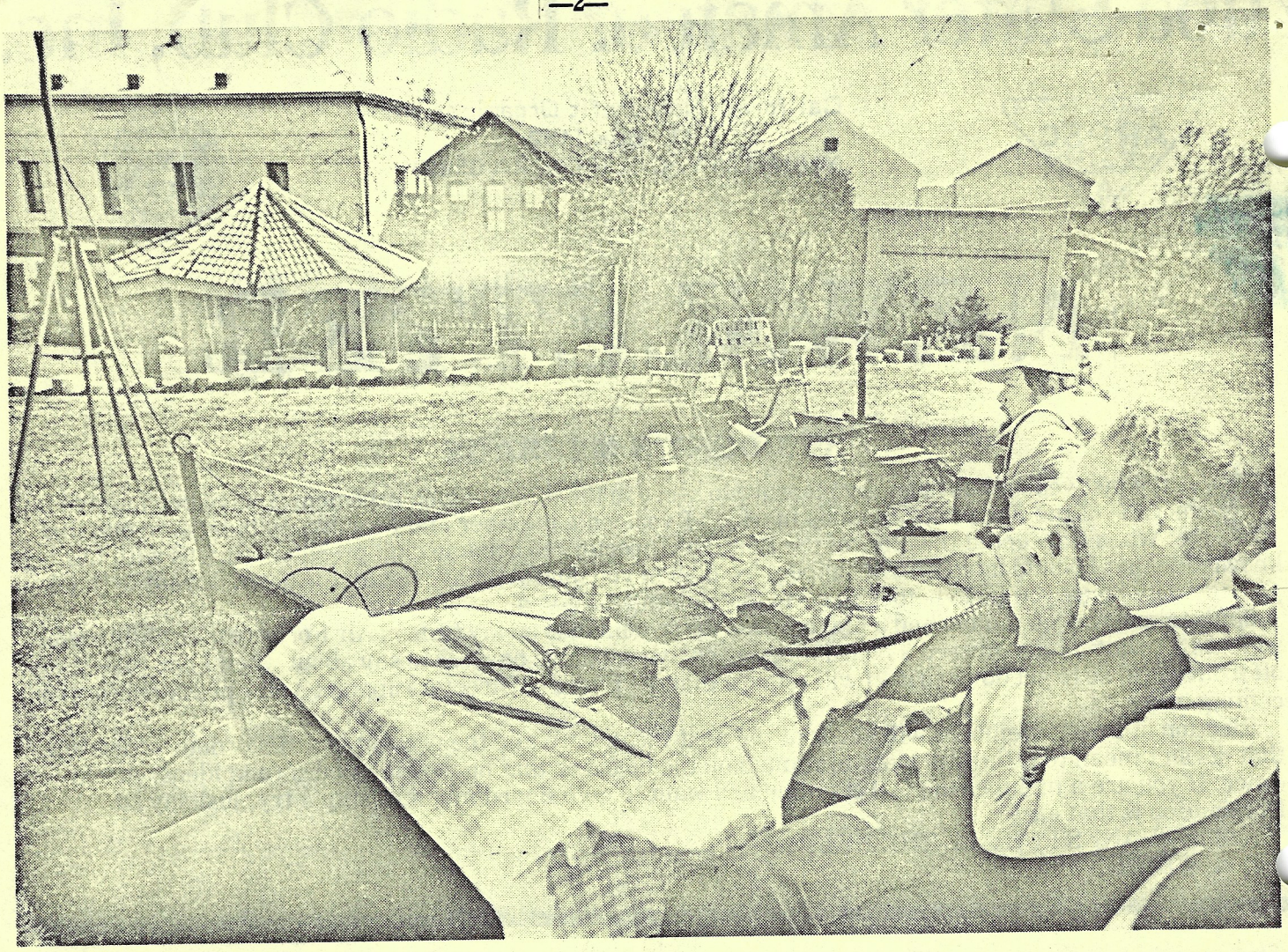


WA6AGD, Loyd (foreground), manned the 2-meter station during the early stages of the Bok Kai special events station March 23 in Marysville's First Street Park while and WA6ISR, Larry, manned 20 meters. The entrance to the Bok Kai Temple is in the upper right-hand corner of the photo.

BOK KAI FESTIVAL

Saturday, March 23, found several members — new, old and potential — at the First Street Park in Marysville for our special events station commemorating the 105th Bok Kai Parade and festival. Three stations covering 20, 40 and 75 meters and another for 2 meters were operated during the day. Several area hams and potential hams stopped to watch the operation, including some currently studying for their novice tickets.

A total of 26 states were contacted as well as Canada, Australia, Costa Rica, Great Britian and Japan.

Thanks to ALL who helped to make this a successful and fun day, in particular:

Jerry, N6DDP	Larry, WA6ISR
Bill, N6FAB	Ron, WB5FIX
Bud, K6HDE	Harold, KE6AX
Barry, KE6LW	Rob, K6EPH
Howard, N6CCS	Larry, K6AAW

and all the spouses that patiently tolerate this hobby.

A beautiful certificate has been prepared and those who worked the special events station can look forward to receiving a fine piece of "wallpaper".

Does anyone want to do it again next year?

Loyd, WA6AGD

Cont. from Page 1

DERBY

watch for any problems or medical emergencies that might come up.

The plan now is to operate in two shifts with a minimum of five operators on each shift. If we have additional operators, we very much would like to have one or two walking the lake perimeter as the four major points are quite spread out. We will work from 8:30 a.m. to 12:00-12:30 and 12:00-12:30 to shortly after 4 p.m.

Please contact me if you can spare the morning or afternoon. Assignments will be made on a special net at 7:30 p.m. Wednesday, April 10 on the WD6AXM repeater.

Larry, WA6ISR

COMING UP

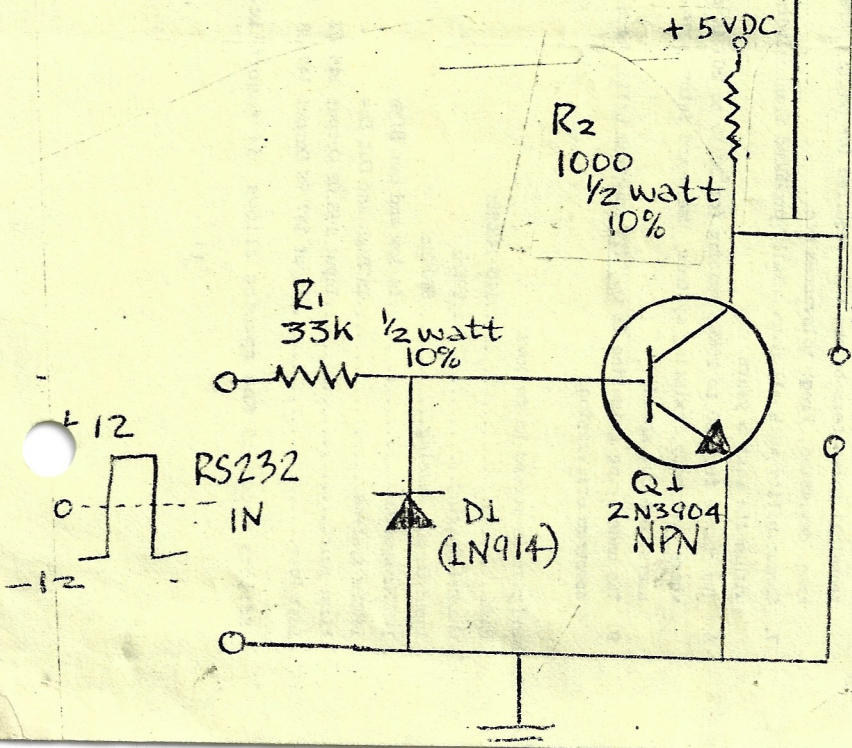
The Fresno Amateur Radio Club's Fresno Hamfest is scheduled May 3, 4, 5 at the Tropicana Inn in Fresno. Full registration before April 19 is $24, $26 after April 19, and includes admission to all exhibits, prizes, banquets and talks. Day registration for exhibits and talks only will be $10 with banquet reservations available at $15 and luncheon reservations $5.50. Checks should be mailed to the Fresno Amateur Radio Club, Inc., P.O. Box 713, Fresno, Ca., 93712-0783.

Hamswap'85 is scheduled Sunday, May 5, at the Placer County Fairgrounds in Roseville. Doors open at 9 a.m. with free parking, free admission and free door prizes. Food and refereshments will be available and hourly raffles and club auctions will be held. The grand raffle prize (donations of $1 per ticket or 6 for $5) is a Kenwood TS430S. On-site or tailgate sales will be $8 per table or tailgate location.

HSC will sponsor an Electro-SWAP '85 session June 1 on Hemlock north of Auburn Boulevard in North Sacramento. The session begins at 7 a.m. and will involve ham gear, audio equipment, test equipment and computers. They ask that you bring your own table and shade but selling space is free.

UPGRADE — There will be an up-grade exam May 10, 1985, in Sacramento. If interested, please send your check for $4 with a copy of your license to: Glenn Koropp, 1980 Santa Maria Way, Sacramento, Ca. 95825. The check, made payable to ARRL/VEC, must be in by May 1.

HELPFUL CIRCUIT



Here's a little circuit for converting an RS-232 (+12 to -12 vdc) signal to TTL (0 to +5 vdc) — a nice thing for several computer interface operations, especially computerized RTTY/CW. I used it for several years with Commodore products.

AJ6M ANTENNA FARM

Bill Williams is liquidating his antenna farm in Yuba City. It won't fit in his apartment! The following items are for sale:

1) 71-foot crank up, tilt over tower, $800 firm.
2) 51-foot crank up tower, $400.
3) 1 Ham-four roter, $90.

MONO BAND ANTENNAS

4) 2 element, 40-meter beam, $100.
5) 5 element, 20-meter beam, $100.
6) 6 element, 15-meter beam (KLM), $100.
7) 5 element, 10-meter beam, (KLM), $75.

For information on these items, contactv Ron, WB5FIX, at 674-8533. The antennas will have been taken down by the time this is read with all pieces marked for quick reassembly.

BAND PLAN CHANGES

There are 197 2-meter repeaters in Northern California, according to the Northern Amatuer Relay Council (NARC). That nummber includes 159 in our area in the 146 to 148 range — 89 registered in the Greater San Francisco-Sacramento area in the 145-148 range.

Now, you may have guessed, this is leading up to something. NARC, at its April meeting, will get into serious dicussion about changing our band plan from 15KHz spacing to 20 KHz. Indications are it boils down not to **if** we will switch, but **when**. Washington and Oregon already have started the switch, Mexico, Texas and the Southwest have done it and Southern California appears headed for it.

Briefly, NARC says the new spacing would allow up to 3 repeaters per channel as opposed to the 2.5 ratio under the 15 KHz plan. Geographical separation necessary between adjacent channels now necessary using 15 KHz is not necessary under 20 KHz spacing, the NARC boys say, meaning better frequency utilization.

Rest assured, there will be discussion about this at our April meeting. Dave, WD6AXM, is looking for guidance when he represents us at the April 13 NARC meeting.

The following pages are copied from the NARC April newsletter and attempts to explain and answer questions about the 20 KHz vs. 15 KHz band plans.

20 VS. 15 KHz UPRIGHT SPACING FOR 2 METER REPEATERS
146 THROUGH 148 MHz

BY....

CLAY FREINWALD, K7CR AND JON MARCINKO W7PHZ

Spacing for 2 meter repeaters by 20KHz rather than 30/15KHz was initiated in Western Washington in the spring of 1978 as the result of a careful study of how to best utilize this spectrum. The following design criteria was met:

1. Negligable degredation to existing systems due to adjacent channel QRM.
2. Negligable degredation to users radios due to adjacent channel QRM.
3. Elimination of the treat of adjacent channel 15KHz un-coordinated repeaters.
4. Newly created pairs are usable without restrictive adjacent channel physical seperation requirements.
5. Newly created pairs are just as viable and usable as the 30 KHz channels.
6. Users are not required to operate with restrictive or un-obtainable technical parameters beyond that required for 30KHz operation, ie. Freq. deviation, Freq. tolerances etc.
7. Compatibility with all commercially produced transceivers manufactured within the last 5 years.
8. The change from 30 to 20KHz spacing (or 30/15 to 20) is a situation where everybody, existing systems, Users and future systems and their users come out ahead.
9. The underlying guideline is QUALITY spectrum utilization not QUANTITY spectrum utilization.

The band plan is stated as follows:

Band.....146-148MHz
Channel Spacing.....20KHz
Input/Output spacing.....600KHz
146MHz systems.....In low and out High
147MHz systems.....In High and Out Low
First pair.....Input 146.02 Output 146.62
Last Pair.....Input 147.98 Output 147.38

TOTAL = 40 PAIRS

(Editors note: 15 Khz spacing allows 54 theoretical pairs).

Areas having adopted and using the band plan:

Washington	Montana
Oregon	Utah
Idaho	British Columbia, Canada

COMPARING THE PLANS

ISSUE: Adjacent channel degredation (QRM) to receivers caused by users transmitters.

20KHZ: Minimal, there are no physical seperation requirements. Tolerances are compatible with those for 30KHZ spacing, compatible with all current production equipment.

15KHZ: Considerable, system requires physical seperation of repeaters, (50 to 75 miles) and tight control of all tolerances, Users of adjacent channel systems operating near repeaters can cause severe interference and desensing of system receivers.

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ISSUE: Adjacent channel degredation (QRM) to users radios from repeater transmitters.

20KHz: Minimal, there are no physical seperation requirements, tolerances are compatible with 30KHz spacing and with all current production equipment.

15KHz: Considerable, especially when operating adjacent channel repeaters requires physical seperation of repeaters and tight control of all parameters. Users receivers can be desensed, due to the adjacent channel field, or the user may do so, by being forced to tighten the squelch to try and minimize the adjacent channel QRM.

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ISSUE: Threat from un-coordinated splinter channel repeaters.

20KHz: NONE! splinters will not work.

15KHz: Considerable an uncoordinated system which violates seperation, deviation, or other technical requirements can cause severe adjacent channel degredation.

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ISSUE: Compatibility with users radios

20KHz: YES all radios produced in the last 5 years are fully compatible with the plan and will operate without modification.

15KHz: NO all radios produced in the last five years will operate the frequencies but many will not be compatible with the selectivity requirements of the receiver nor the modulation limiting requirements of the transmitter.

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ISSUE: What do you do when the band is full.

20KHz: No longer coordinate anymore repeaters, use CTCSS as in the commercial world, populate 220, 450 or 50MHz.

15KHz: The same as for 20. NOTE the level of interference will be dramatically worse in the case of 15KHz, just ask anyone from the Northeast part of the country. In a 15KHz environment the physical seperations become less and less as time goes by in efforts to squeeze in more repeaters.

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ISSUE: What do you do about older radios?

20KHz: All older radios, IC22-S etc. are easily modified, crystal rigs can be padded, or in extreme cases, new crystals purchased.

15KHz: Many old radios will not operate due to the selectivity of their receivers and must be modified by installing IF filters etc, even then they may not work depending on the adjacent channel activity in the area the unit is used.

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COMMON QUESTIONS AND ANSWERS ABOUT 20KHz

ISN'T 20KHz A RADICAL APPROACH?

No not at all..... it may appear radical, but this is a matter of prospective. Many feel that once a set of crystals are installed in a system that the repeaters frequency is cast in stone, this is simply not the case. A change in frequency of 10KHz is all that is required, who would not purchase 2 crystals in order to gain so very much? We made a serious mistake when we kept dividing by 2.....120KHz spacing became 60, then 30 and then 15. This is radical! Looking backward, we should have divided 60 by 3 and saved a lot of people a lot of trouble....this would have been a rational move. From an equipment compatibility standpoint the plan is not radical at all. To the operator of a splinter channel repeater the plan is not radical. To the entire Pacific Northwest, the plan is not radical.... to the admittedly over congested and over-repeatered Northeast part of the country the idea of creating a 2 meter band free of conjestion, to them, the idea is radical, its a matter of prospective.

WHAT ABOUT THE COSTS OF CHANGING FREQUENCY?

In some cases the 10KHz change in frequency has been accomplished by simply padding the existing crystals, in the cases where a repeater changes frequency to create the new channel (ie. 146.67 moves down 10KHz to 146.66 creating a new channel at 146.68) the party putting the repeater on the new frequency buys the crystals for the system that moved. Duplexers, cavities, antennas etc. do not have to be changed or modified.

IF I CHANGE FREQUENCY WHAT ABOUT THE USERS THAT SUPPORT THE SYSTEM?

It has been clearly shown all over the region that the users go wherever the repeater goes. At the outset some systems were reluctant to change frequency for fear of losing those that have been on the repeater for years or, in

particular, those that have supported the financial aspects of the operation, those fears, as it turned out, were groundless.

IF WE CHANGE FREQUENCY WON'T WE BECOME AN ISLAND INTO ITSELF, CONFUSING THE TRAVELING AMATEUR?

This is not the case, the Northwest with a great deal of tourist traveling amateurs in the summer and a large military population has supported the statement that the users go to where the repeaters are. Most people will look up the frequency in the repeater guide, dial it up.... and operate. The frequency the repeater operates on is not important to the users.... matters like coverage, autopatch, linking, and interference are far more important to them.

DON'T WE WANT TO WAIT UNTIL THIS IS A NATIONAL BAND PLAN BEFORE OPTING TO CHANGE?

NO!!! First of all there is no such thing as a national band plan for 2 meters. We have actually 7 different band plans for the 2 segments of 2 meters.....from 144.5 to 145.5 we have 3: 20KHz spacing on odd numbered frequencies (the most popular system)....20KHz spacing on even numbered frequencies (the southern California system) and 15KHz spacing (Colorado only) from 146 thru 148MHz we have 4 systems....30 KHz with no splinters. ....30KHz with upright splinters..... 30KHz with reverse splinters..... 20KHz spacing. The only "National" system we have going is the 600KHz offset.... and this in some congested areas has been altered to squeeze in a few more repeaters at the expense of the simplex frequencies. We in the Northwest looked at all the plans and opted for the one that was the best for us and that was 20KHz spacing, with 600KHz offset throughout the band.

WHY WERE THE ODD NUMBERED REPEATERS ASKED TO MOVE, KEEPING THE EVENS?

Even though one additional pair would have been created had we gone to the odd numbered pairs, more repeaters would have had to potentially change frequency. Remember the first repeaters were on the following pairs..... 04-64/16-76/22-82/28-88/34-94...all even numbered. Even today as you drive thru the small towns you find these are the pairs that are in use. In the Northwest we found that only 38% of the repeaters were on the odd numbered pairs..... In New Mexico its 44%. Simply put, going to the evens displaced or would potentially force the least number of repeaters to QSY.

DID SOME REPEATERS MOVE FOR REASONS OTHER THAN TO CREATE NEW PAIRS??

YES... many move for what we call the "self reservation QSY". One of the biggest problems is the un-coordinated splinter channel repeater that can cause havoc on the band. Several systems asked for permission to move to a 20KHz pair to PRECLUDE a splinter from moving in next to them.... even to the point of encouraging another repeater to move 20KHz away from them to "lock up" a portion of the band and prevent the problem.

DID ALL REPEATERS MOVE DOWN 10KHz?

Generally yes, this is to make it easier on the users with crystal controlled radios (they can move down much easier than up). In some cases the frequency coordinators ask that a system move up 10KHz in order to permit better planning on a regional basis or in cases where a down 10 move would result in intermod for existing or potential systems. This transition can be viewed as a chance to correct coordiation mistakes of the past. For example if two systems were on 87-27 and were interfering with each other moving one system up and the other down would make sense.

CAN'T WE PUT MORE REPEATERS ON THE AIR USING 15'S RATHER THAN 20'S.

The answer is yes..... but at a price.....the price you pay is quality. By going to 20KHz you will gain 12 new pairs in each metro area, pairs that can be re-used over and over again using standard co-channel seperation criteria. 15KHz systems must be physically seperated , that quite often requires them to be installed in areas that are un-desirable, out of town, away from populated areas etc. All 15KHz systems operate on a sub-standard basis to the original 30's and actually cause degredation to the original.... with 20 you have no degredation to existing systems, and only create new frequencies for new systems that are just as good as their neighbors. Again more repeaters for the sake of more repeaters should not be the goal of any amateur or amateur organization. With 20KHz spacing you will have 59 viable, usable, quality repeater pairs that should handle the communications requirements for any area.

WHAT DOES THE FCC SAY ABOUT CHANNEL SPACING?

In the FCC'S Notice of Propose Rule Making NPR 84-80, the Commission noted "FM based radio systems generally have been able to keep pace with increasing spectrum demands," But it also observed that "current FM techniques require at least 20KHz of spectrum for voice communications."

WAS ANYONE FORCED TO CHANGE FREQUENCY?

NO... The concept of 20KHz spacing must be viewed, not as a change of band plan whereby all repeaters that are on odd numbered pairs (ie. 67, 25 etc.) must change frequency to comply with the band plan. 20KHz is a alternative to 15KHz spacing. When a fellow amateur wishes to put a new repeater on the air in a given area and all the 30KHz channels are full up, RATHER than CRAMMING him in-between two existing 30KHz spaced repeaters, one system that is on an odd numbered pair moves down 10 KHz (or 20Khz from his lower neighbor) creating a new pair that is 20KHz away from his neighbors..... this simple concept is worked many many times. ONLY when there is need for spectrum is anyone asked to QSY....

HOW LONG WILL IT TAKE FOR THE CHANGE FROM 30/15 TO 20KHz SPACING TO BE COMPLETE?

Generally it is taking about 5 years..... in the metropolitan areas the pressure for spectrum is greater so the time frame is more like about 2 years.... but again in the rural areas where there is no pressure for spectrum the transition may take a long time, this is why when you look at a repeater directory from the Northwest you will still see systems on odd numbered pairs. It is pointless to ask anyone to change frequency when nothing will be gained. The 5 year period is the same time frame that the ARRL is looking at for changing from 15KHz reverse splinters to upright in those areas effected.

HAS THE ARL RECOGNIZED THE 20KHz PLAN?

YES.... In recent issues of the repeater directory the League has noted that the Northwest is using 20KHz spacing...the League realizes that Local Options take presidence.

WHAT DOES THE NORTHEAST PART OF THE COUNTRY SAY ABOUT THIS?

When asked for comments about an area changing from 30/15 to 20 they are against it....for one simple reason....they have an admittedly overcrowded band, based on 15KHz, and have no choice but to live with it. When you ask what would you do if you had it to do all over again they say they'd go 20....this is proven, for when the new sub-band (144.5-145.5) opened up... they voted to not create another problem, it was 20KHz that got the vote.

ARE YOU ADVOCATING THAT ALL AREAS OF THE COUNTRY CHANGE TO THIS SYSTEM...?

No, for one simple reason...not all areas can...some parts of the country 2 meters is so incredible congested that the changing to 20 would be impossible....In my view they have ruined the band.. in those areas that still have time to implement 20KHz spacing, I certainly recomment that they make the change.

CAN'T WE JUST LEAVE WELL ENOUGH ALONE? ARN'T THERE ENOUGH REPEATERS NOW?

This sounds great....unfortunately there is no method of limiting the number of repeaters, they just keep coming, coordinated or not. A change to 20KHz spacing is a method whereby you put physics on the side of the coordinators and create a system whereby when the band is full, its livable, and not, as in the case of the 15's lays the groundwork for an unlivable situation. We call adjacent channel QRM, unlivable.

WHAT SPACING SYSTEMS ARE USED IN OTHER BANDS?

It is most interesting to note that with the mistakes made on 2 meters behind us subsequent band plans have taken the following form:

2 Meters, 144.5-145.5 MHz.....20 KHz Spacing, From the Beginning
6 Meters, 52-54 MHz.....20KHz spacing from the beginning
1 3/4 Meters, 222-225 MHz.....20KHz spacing, split from 40KHz
10 Meters, 29.5-29.7 MHz.....20KHz spacing, changed from 15KHz
VHF Marine Band,.....20KHz spacing
Mid Band, 72-76 MHz.....20KHz spacing
UHF Band, 430,450MHz.....25KHz spacing
Other countries, 2 meters.....20 Or 25KHz spacing

TO MAKE THE CHANGE.....

May we suggest some steps, based on our experience.

1. Announce that you are no longer going to coordinate any further systems on 15KHz spacing. It is vital that this activity stop immediately.

2. Study the implimentation of the band plan, put your computers to work and plan who would go where, look at co-channel spacing, intermod etc. put maximum effort into protecting existing systems, correcting mistakes of the past etc.

3. Develope sound rational as to why this is good for the existing repeater owners and users.

4. Plan how you will use the newly created pairs, CTCSS ONLY, Testing Non-Protected, Data Only, ACSB etc.

5. Announce that you will no longer coordinate any new repeaters that are on non-compatable frequencies (Odd numbered and 3 digit pairs) and that you are going to start the phase in of 20KHz spacing.

6. Start an intensive campaign to enlighten all repeater owners and users as to what this change means, how it works, and why its good for them.

7. PERMIT owners of existing odd numbered repeaters to QSY up or down, (you will find considerable willingness on the part of many owners to do this.)

8. Encourage owners of repeaters, in areas where spectrum is needed, to QSY up or down (the direction comming from the coordinators based on results of 2 above).

9. As the new pairs come up, coordinate the moving of the existing splinters to those frequencies first.

10. Coordinate new systems to the newly created pairs as they become available.

REMEMBER.....

The hardest part is making the decision to go 20KHz....its all down hill from there.

CONCLUSIONS:

Two meters has been transformed from a vast wasteland where a few amateurs operated CW/SSB/AM etc. to the most viable communications systems in the history of Radio. The single factor effecting that transition has been the repeater.

Repeaters allowed us to cover the miles that were naturally limited by the short range propagation characteristics of the band. Amateurs saw the possibilities and installed systems in just about every town in the country... in the West they used mountain tops in the East building tops, building systems that would go farther....multiple systems were linked together to cover even larger areas....autopatches were installed to permit instant access to the law enforcement agencies....and on it went.

Today we have a incredible communication system...but along the way we encountered a problem that is perhaps unique to our spectrum, that is needless duplication at the expense of others. In other aspects of electronic communications there are agencies that realize that the spectrum has a finite limit and works with the users of that spectrum to respect that limit and if required, to put a stop to further growth.

It would appear that CB should have taught us all a powerful lesson congestion but even in amateur radio the human ego must be fed, but unfortunately that same ego can fuel the desire for just one more repeater, at the expense of another.

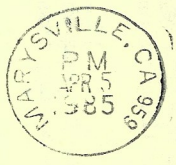
Every Coordination council in the populated areas of our country has/or soon will be, forced to deal with how to limit the growth and crowding on this our most popular band. Most coordination organizations have done all they can....some others have simply given up....and many have walked away....you will find them on 220/450 or 6 meters...talking about how they have witnessed 2 meters go from the "great" band to the over-crowded one that they don't use anymore.

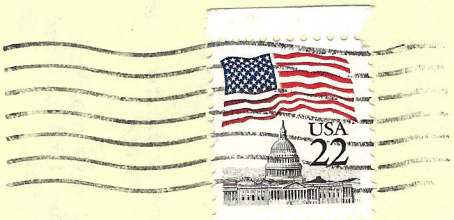
It is clear that to continue to fill the band with more and more repeaters is not the answer....a goal of quantity at the expense of quality has never created a better environment..... perhaps this is why the Pacific Northwest was the one to reject the,"but we can put on more repeaters with 15KHz spacing....." argument....Northwesterners are used to clean air....lack of congestion....we are pioneers at heart that don't always look up at what has been done in New York or Los Angeles...we didn't on 2 meters and as a result threw out the 30/15 system in favor of 20KHz spacing...preferring QUALITY to quanity. The coordinators in the Northwest have rejected the crowded concepts of the Northeast and Southwest as not requested, Not required, Not needed and certainly NOT IN THE BEST INTEREST OF AMATEUR RADIO.

The Northwest had a chance, with its switch to 20KHz, to limit and control the growth of 2 meters and create a system that would insure maximum peaceful use of the spectrum, perhaps at the expense of a few ego repeaters and criticism from the excessively congested areas of the country.

Coordination councils have not only a responsibility to the existing repeater operators, but to those that will come on board. Beyond that, the coordinators have a responsibility to the users of today and tomorrow to not only plan the growth of the band, but the orderly growth of same. The smart man is one that learns from, and does not make the same mistakes as those who have gone before him....ie. conformity at the expense of quality is not good judgement.

We in the Northwest are proud of our 20KHz system, just ask anyone who lives here, repeater owner or user...or better yet come see for yourself.....should you decide that its 20 for you we have just one question.....How can we be of help.





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