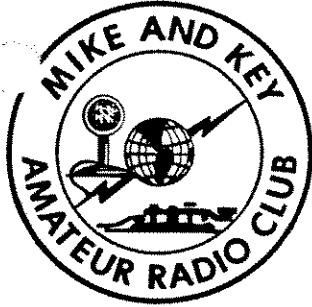


K7LED RELAY



The K7LED RELAY is the Official Publication of the MIKE and KEY AMATEUR RADIO CLUB, P.O. Box 2121, Kirkland, Wa 98033-2121. The club meets the third Saturday of each month at 9:30 AM in "The Tukwila Community Center", 4101 South 131st. Seattle, Wa. 98168. All "HAMS" invited. The Mike & Key Net meets each Wednesday evening at 1930 hr on 224.12 and 146.82-22 Mhz. The repeaters are linked. Your Check-in is welcome.

AN ARRL AFFILIATED CLUB LOCATED NEAR SEATTLE, WASHINGTON

VOLUME 17

AUGUST 1989

NUMBER 8

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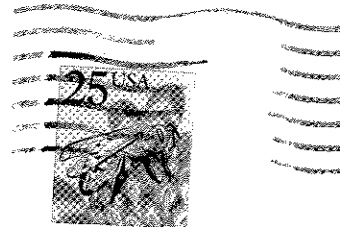
RELAY DEADLINE 5 SEPTEMBER 1989



NO NEWSPAPERS THIS MONTH

NOTICE: MEETING DATE CHANGE FOR AUGUST

REPEATER FREQUENCY
52.05 - 53.05
146.22 - 146.82
224.12



BOARD MEETS

First Class

FIRST TUESDAY
OF EACH MONTH

CLUB MEETING
Third Saturday
of Each Month

HEDBERG, PETE
20904 NE 77TH ST
REDFORD
WA

K7WTG

MEETING WILL BE ON AUGUST 26 AT PICNIC

TUKWILA COMMUNITY CENTER
4101 South 131st
Seattle, WA 98168
Phone 243-5198

Breakfast 0730
Riverside Inn, Tukwila

COFFEE AND DONUTS WILL BE READY AT 0930

The
President's
Corner

With most of our summer events, Field Day, Torchlight and Seafair, a thing of the past it is time to pay attention to the rest of August and the coming Fall.

First off, it was voted by the membership that the August meeting be scheduled to coincide with the picnic to be held on August 26th. Details are elsewhere in the relay. Looking forward to seeing you all there.

Please take note of the article on newspaper recycling efforts. PLEASE NO NEWSPAPERS AT THE PICNIC!

The next recurring event will be the Christmas party. This is normally held on the 1st Sat. in December. Now is not too early to make arrangements, plan decorations, and whatever else the Club might want.

The end of August leaves just six months in which to handle the Flea market, new elections and the banquet. It will be here before you know it. BE SURE LISTEN TO THE WEDNESDAY NIGHT NET FOR FURTHER NEWS AND ANY CHANGES.

73, Jack

HELP NEEDED FOR AUBURN PARADE ON AUGUST 26 AT 8:30 AM. Talkin on 146.58. Come help with the parade and then attend the picnic at about 12:30 pm. WA7EBH

NO NEWSPAPERS AT PICNIC

OST OST OST
FIELD DAY '89 RESULTS

Band	'88	CW	'89
80	141		53
40	406		200
20	571		677
15	218		295
Packet	20		26
TOTAL	1,356		1,251

		PH	
160	20		0
80	389		303
40	231		211
20	849		770
15	531		754
Nat Pwr	7		6
Satellite	37		50
Novice	188		92
TOTAL	2,252		2,186

'89 TOTAL

CW QSOs X2 = 2,502
PH QSOs X1 = 2,186
4,688

Double points for using less than 150W 9,376
Bonus Points 1,300
TOTAL '89 POINTS 10,676

All in all we had a good Field Day in spite of some problems. Bugs, equipment left behind, etc. but in the spirit of FD we got the planned stations on the air. I had a good time both during operating and when on the run for something. Last year we submitted 11,378 points operating 7A. The winner in 6A last year had 9,642 points. We should do OK in that class. Thanks for your cooperation the past two years and I will be looking forward to working with Jim, K7ND next year...73, Jack, KB7ZS

DON'T TAKE ANYTHING FOR GRANTED
Greetings! After my brief, but eloquently

delivered, speech on the Part 97 Re-write, it came to my attention that some of those in attendance did not understand, no, not Part 97 itself, but some of the seemingly more common verbiage we as Hams throw around at each other. We must keep in mind that the Mike and Key Club is a growing club. Many members have only been licensed a short time, and many have only VHF-UHF experience. Many of the Q-codes and stuff are foreign to these people. Nothing wrong with not knowing, none of us grew up with this kind of vocabulary. So, in fairness to some of the newcomers, in the next few months I will devote a brief article each month to explain some of the jargon we as Hams seem to hold so dear.

This month those dreaded Q-Codes

Q-Codes were devised for mainly Code operations. They made their way into phone procedure as an off-shoot of it's origins. What many people do not know, is that the Q-Codes mean the same in every language! QSL, for instance, means the same thing to a German as it does to a Frenchman. It would be possible for two people who do not speak each other's language to carry on an intelligible contact using only Q-Codes and filling in the appropriate information where required. It may not be overly interesting, but it would get the job done. Some of the more common Q-Codes follow:

QRL Are you busy? In CW, often used to see if a freq. is in use before calling CQ.

QRM Is my transmission being interfered with? Usually, man-made interference.

QRN Are you troubled by static? As used, QRN refers to natural atmospheric noise, not QRM.

QRP Shall I decrease power? QRP usually refers to those who revel in low-power operation. 10w PEP phone, 5w out-put CW.

QRO Opposite of QRP.

QRS In code, means Please send slower.

QRU Do you have anything for me? In voice Nets, means "I have no traffic."

QRZ Who is calling me?

QSB Are my signals fading? Usually sent to indicate wavering sigs.

QSK Can you work break-in? CW term for capability of being able to listen between the dots and dashes in a CW transmission.

QSL Can you confirm or acknowledge receipt? By voice, is similar to 10-Codes' 10-4!!!

QSO Can you communicate with...? Generally used to refer to a completed 2-way contact.

QSY Shall I change frequency?

QTH What is your location?

and last, but not least....

QAO Are you an appliance operator?

Oh well, I hope these prove helpful. Take care, and 73. Al WV7R

RAFFLE UP-DATE
by WV7R

Some of you have been asking when will we be giving away the Handie--Talkie as the semi-annual club raffle give-away. When I had originally envisioned the quarterly give-away, I had hoped that the addition of a "little something extra" would spur a new interest in the raffle, and there-by generate more revenue for the Club's Banquet fund.

For those who came in late, the proceeds for the monthly raffle go into the kitty for funds for the main prizes at the club banquet. Of late, interest and participation in the monthly raffle had fallen way off. By adding decent, useful monthly prizes, and eliminating the "boat anchors" and pages from Marconi's Diary, it was hoped that more money would be generated for the Spring Awards Banquet. This has not happened. True, interest has picked up from what it had been, but no where near where it should be. We will be giving away the HT, but it seems that it will have to wait a bit for the thing to pay for itself. As soon as the expected "margins" are realized, it will be given away.

Some have told me that they do not go to the banquet, therefore why should they support the grand prize fund? Why support the club? I have been under the impression that we all decided to join the M&K to further our enjoyment of the hobby, learn new techniques and technology, and to fraternize with people who have similar interests as we do (in this case, Ham Radio). So...let's get back at it! This club is know as being one of the most active in the state, but I see signs of vegetation setting

in. If you miss the banquet, you are just flat-out depriving yourself of a good time. No one who has some of the gear that we do can cry on my shoulder about the exorbitancy of the banquet fee...I just don't buy that one. So come on guys and gals, let's get active, support and attend club functions, and buy lots, and lots and lots and lots of raffle tickets!

...DE the Activities Manager.

FUTURE PROGRAMS

In keeping with my desire of getting more technical content into our meetings, here is a calendar of up-coming attractions:

August	26	Club Picnic
September	16	ICOM's Mark Allen
October	21	Rick NU7Z - Band Planning/ Frequency Utilization
November	18	Tentative, Computers

Suggestions? Please call me at 823-4393, or leave me some packet mail at WV7R @ WOLVJ..73, WV7R..See you at the picnic.

SEAFAIR THANK-YOU

A heart felt thank-you to all of those people that participated in the Seafair Parades. We had our problems, as usual, but the overall success was well earned by those that helped. I wish to thank everyone on behalf of the Parade Marshals for your participation, and for those who didn't you missed a great time.

DECISION

There are times to talk of things to come, said the "Newspaper Man" to the "President", of what has gone past, Club money, and old Newspapers.

It seems that we are not doing very good on the income from the sales of old, previously read, used newspapers. Since the City of Seattle decided to get on the bandwagon (or is it the newspaper wagon) and start a re-cycle program on most everything that the local population throws away, the price of newspapers at the re-cycle house has re-cycled to just about nothing a pound.

KA7QHG, Frank, who is running the newspaper sales states that "the price is not 1/2 cent a pound". It is not worth the effort to collect and sell newspapers to the re-cycle house. -So, it is time to confront the Club "as to what they would like to do!!!

The consensus of opinion (on the repeater, that is) is:

- 1) we stop the newspaper collection until the price makes it worth while again,
- 2) solicit donations from the club members, at each meeting (25 cents or more) to replace the newspaper collection,
- 3) make an appropriation from the club treasure so there will be money to replace the newspaper sales.

Sir, this has to be decided ASAP, if not sooner.

By the way, there will be NO newspaper collection in the month of August due to the picnic. There will be a brief meeting at the picnic, but DO NOT bring newspapers. WA7EKH

M&K ARC MEETING MINUTES

July 15, 1989

The meeting was called to order by Jack, KB7ZS at 10:01. Introduction of officers, members and guests followed. In attendance were 60 members and 4 visitors.

Vice President, KB7ERE reported on upgrading members and new call signs. The new applicants were introduced: Aldo Samboni, N7NYM; Dick Vance, K7NEX; Rick Antes, KF7VG; and Joe Kelnkoa, KB7ICO. All were approved and welcomed to the club.

Secretary, WB7AYU, read the minutes of the June meeting and it was moved by WN7NXC, seconded by W7EVS to accept them as corrected. There was no other correspondence.

Treasurer, WA7EBH, reported a balance of \$8,500. and that a Certificate of Deposit with a 31-day renewal rate has been obtained.

Activities Mgr WV7R reported that a technical presentation will be held at the September meeting.

Chairman of the Board, KA7CSE, reported on the Board meeting discussions and invited everyone to attend the board meetings. Next one to be held on Aug. 8.

Radio Officer K7YR reminded all to use good operating practice and courtesy when using repeaters.

No-Code Survey: K7YR reported 35 respondents out of 163 members (21.5%) and read the club's letter of response to the League. Copies are available to the members. Ken also reported on Field Day operations and presented a special award termed the "Motor Mouth Award" to Jimmy, WM7A, for his help on the 15 ph. station.

A break was taken and the meeting resumed at 10:50 with committee reports following: RELAY- Articles can be sent to the Editor by packet BBS. The call has been changed to N7HFZ temporarily.

ATV- Meeting is scheduled for July 27 at the Puget Power Bldg. PUBLIC SERVICE- Chuck reported on SeaFair dates and passed out sign-up sheets. There are many activities in the next 3 weeks. Contact him to schedule your help. Wayne also adds other events for August and September and reminds folks to listen to the Public Service Net on Thursdays at 1900 on the K7LED 2-meter repeater.

A Field Day Synopsis was presented by Jack, KB7ZS, Field Day Chairman '89. Jim, K7ND, has agreed to chair the 1990 event.

It was moved by Ray, WA7EKH, seconded by Monty to replace the club coffee pot, approx cost \$85.00. Motion carried.

The next meeting on August 19 conflicts with the Tacoma Hamfest. Motion was made by Jack to hold a business meeting on the picnic day at the site. Approved by show of hands of the membership.

A visitor, Sonny, DULJZ, from The Philippines, described amateur activities in the Islands.

Mary Lewis reported that Brian Sternberg, former U of W athlete, is in need of a new antenna and is requesting assistance from the membership.

Jim, K7ND, is taking orders for club jackets and wind socks and announced upcoming amateur radio classes at Highline C.C.

It was announced that Chuck Grazier, WA7RJT, has donated his generator to the club. We have used it many years for field day power. It is a most welcome gift and a trailer for it is being pursued.

Al, WV7R, presented the technical topics. He covered logging and cautioned about the UTC time difference and getting the correct date and time entered. He also discussed some of the Part 97 rewrite and presented many topics of interest to all.

Gib, W7JIE, suggested our club form a Local Interference Committee (LIC) for our area, then offered the following motion: " The Executive Board solicit members of LIC from club members and appoint a leader. The LIC to be limited to 4 members but more than one LIC should be formed". Seconded by WN7NXC. The motion passed unanimously.

Raffle: An antenna book and League Business Report was won by KB7ICO.

There being no further business, the meeting was adjourned at 12:08. Submitted by Mike, WB7AYU

**NEXT MEETING ON
AUGUST 26 AT THE
PICNIC**

**COME ONE-COME ALL
TO THE MIKE AND KEY PICNIC**

Because of the Tacoma Hamfair, the regular Mike and Key meeting will be held in conjunction with our annual picnic. This will be held on Saturday, August 26th.

As in the past, the Club will furnish hot dogs, hamburgers, buns, and soft drinks. You will bring your own condiments, plates, chips, s'mores, etc. Any questions, contact Al, WV7R at 823-4393 in the evenings.

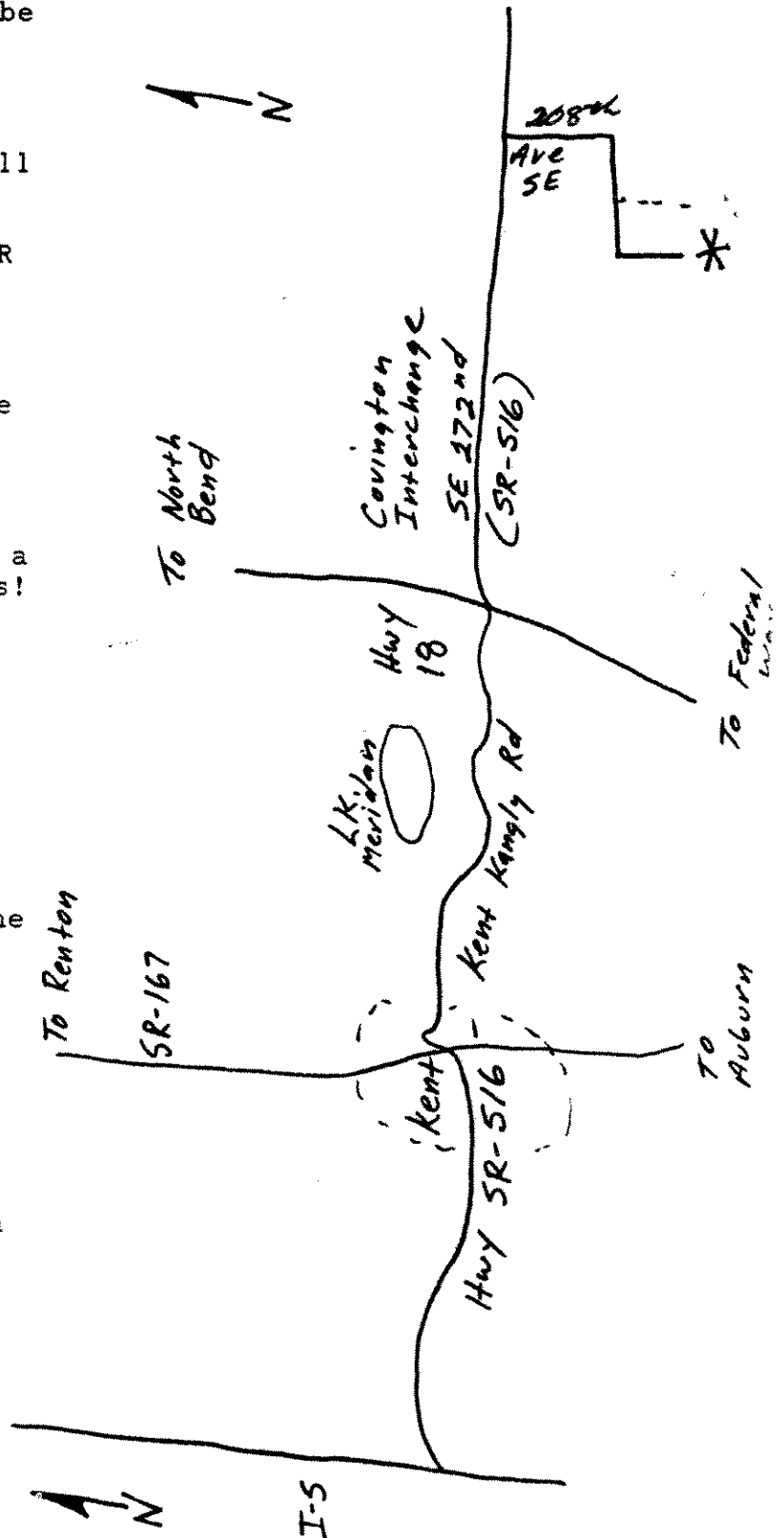
From what I have been told, attendance at the picnic has only been around 50 or so brave souls. Surly a club with over 170 people on the roster can garner more than this for a picnic, especially when it is being held in conjunction with a meeting. Lets out-do ourselves! Let's see everyone there! Driving directions are listed below:

DIRECTIONS TO THE PICNIC
AUGUST 26, 1989

Address: 20709 SE 276th, Kent

From Kent - Go east on Smith Street, up the East Hill to the Kent-Kangley Road (AKA Hwy 516 and SE 272nd St.) to 208th Ave. SE. Turn right, go to the end of the block, turn right again. Turn left into the second driveway and go to the back of the lot.

From HWY 18 - Exit on SE 272nd (Hwy 516/Kent-Kangley Rd), turn east and go to 208th Ave. SE. Pat, W7VIH



September 1989

September Events

SUN MON TUE WED THU FRI SAT

					1	2
3	4 Labor Day	5 7:30pm Board Meeting	6 7:30pm M&K NET	7 7:30pm Public Service Net	8	9
10	11	12	13 7:30pm M&K NET	14 7:30pm Public Service Net	15	16 10:00am Club Meeting Walla Walla Hamfest
17 Walla Walla hamfest	18	19	20 7:30pm M&K NET 7:30pm Flea Market Mtg. at KA7CSE	21 7:30pm Public Service Net	22	23 Autumn begins
24	25	26	27 7:30pm M&K NET	28 7:30pm Public Service Net	29	30 Rosh Hashanah

August

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

October

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

①

Antennas -- General

Understanding that the dipole is reference to all antennas makes things easier for the layman to refer to it when taking issue with gain and directivity types of data. Shown below is a compiling of notes that I hope will give you useful information when designing and building antennas for your own station.

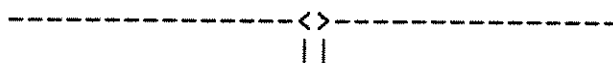
Dipole -By definition is a two element antenna with each of the elements being about one quarter lambda long. One of these is positive and the other is a negative radiator. These antennas are, generally, "flat top" type. This means that the ends of the elements are at the same height as the center insulator. There is no gain to be considered here but for those who use them they really do get the radiated energy to where it needs to go !! Don't be afraid to use these for all of your antenna needs.

In the spacial environment it will yield nearly +2.57Db (2.57Dbi). You should remember that this gain is only for theoretical measurements and has no representation in the real world.

All antennas are built from this basic element and as can be seen later all of the antenna designs that reference to it.

There are so many types of dipole variations that it would be hard to show them all -- but I will give you some of them to try.

**Standard half wave dipole
SINGLE BAND ANTENNA**



468 / Freq in Mhz

This is the standard.

Flat top in nature and has an input impedance of 75 ohms. In theory if you were to make this antenna near full length (i.e. 95%) it should be at 50 ohms. This will work fine for all frequencies under 30 Mhz. This antenna works best when it is established at least a half wavelength off the ground. A quarter wave length height can be used with good results, though.

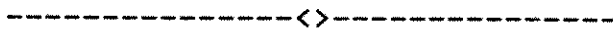
**Inverted VEE dipole
SINGLE BAND ANTENNA**

468 / Freq in Mhz

This antenna has been around a long time. It works fine and is a good compromise for space. By folding the elements back onto themselves you create an input impedance of 50 ohms at the feed point. This also decouples the antenna from its feed line and prevents harmonics from being radiated from the coax itself. This antenna has been used up through two meters. The optimum angle is ninety degrees from tip to tip with the coax coming straight out from the center for at least a quarter wavelength before making any turns. This antennas center point should be at least a quarter wavelength off the ground but will work much better at a height greater than one half wavelength.

**Standard half wave dipole
MULTI BAND ANTENNA**

468 / Freq in Mhz of lowest frequency to be used.



This antenna, when fed with an open wire ladder line will perform quite well on all of the lower bands. It must be cut for the lowest frequency that you would like to use it on, such as 80 meters, but then with use of a match box you can load it on all bands. Once these settings have been established you just dial in the recorded readings into the match box and your on your way. This same type of thing can be done using the INVERTED VEE antenna too. And it will perform as

well.			
this droop is limited up in either antenna will perform less space overall in your yard. It's a long time and is one	type of antenna straight down and you just either of the previous fashion early as well to try.	<>	Another of the element where space the whole thing s. This and take up been around

But to perform correctly the hanging ends should not be more than about twenty-five percent of the overall length of the antenna.

Double Extended Zepp

936 / Freq in Mhz X .64 for each leg

This antenna looks alot like a dipole except it is twice times as long. That is each leg is one .64 wavelength and yields an length of over one LAMBDA. This antenna is generally fed with openwire ladder line and a match box. It has a gain of 3.0Dbd and is bi-directional. It can be tuned to work on all bands but will have a different radiation pattern for each band. It is best to pick the band of interest and then you can use it as a compromise antenna for the other bands. This antenna is the backbone for the G5RV antenna with some changes to make it load with coax cable. This does not mean that the G5RV has gain. It should be noted that this antenna is only a compromise at best.

Yagi - The term YAGI refers to a parasitic antenna that was designed in 1888 by Hidetsugu Yagi.

YAGI - A directional radio and television antenna consisting of a horizontal conductor with several insulated dipoles parallel to and in the plane of the conductor.

A true YAGI antenna is five elements consisting of one reflector, one driven dipole and three directors. Later in the 1920's the Name was changed because of Mr. UDA -- Now known as the YAGI-UDA and having six elements with an approximate gain of 10.72 db and later was optimized to 12.16 db. But the normal gain that can be expected is about 10 to 10.5 db.

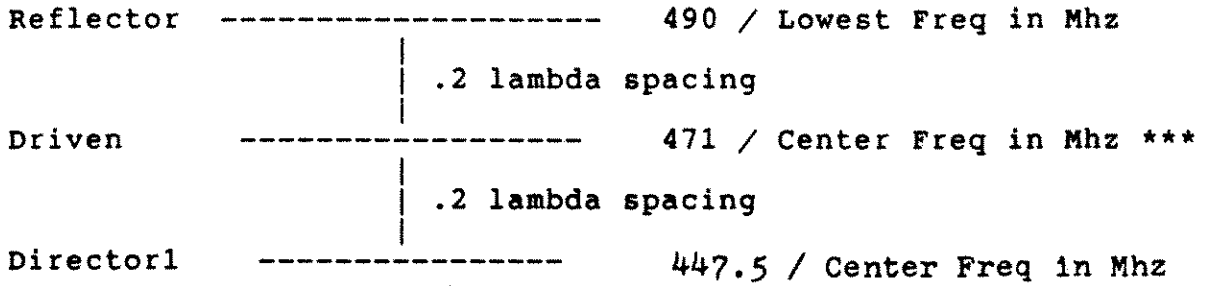
Presented here is a practical approach to building simple beam antennas without the worry of big long formulas that tend to confuse the best of us. These numbers presented work, but may not be what others may deem as best. They will get you started, and you can try your hand at more complicated systems when you feel ready. Since the discussion of theory surrounding how these antennas provide a gain increase is complicated and time consuming (BORING !!!) I won't try to prove my ignorance either. Later in this session I will show you how to build simple matching elements for these antennas and which one is best for each application.

THREE ELEMENTS

- 7.0 Dbd gain MAX -

3

This antenna consisting of one Reflector, one Driven, and one director is the easiest to put together.



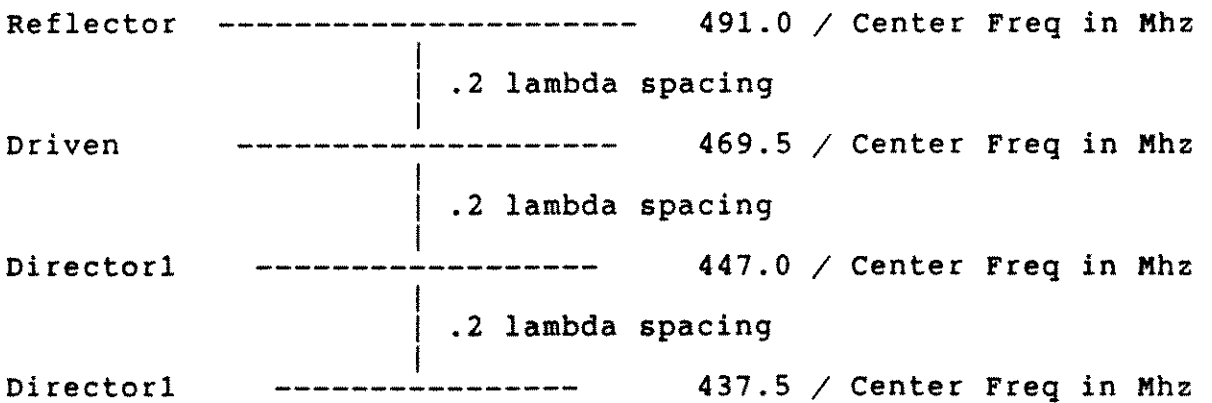
The reason for .2 wavelength spacing is that it provides more bandwidth and is easier to tune when working with the driven element. There is no real difference on gain with .15 spacing except for bandwidth. There are differences in front to back ratio but that is somewhat beyond the scope of this lecture.

By definition FORWARD gain is the gain, in DB, realized when the RF leaves the forward most element as compared to the input power generated at the feed point of the antenna.

The FRONT to BACK amount of signal reduction acquired when the antenna is turned with it's side or back is presented to a signal of known signal strength. Typically 25db is a good number with 30db being better.

One has to remember that you don't get something for nothing and that if you build for maximum gain the front to back will suffer, and if you build for front to back then the gain will suffer. So, it's best to compromise and try to construct so that you get reasonably close to max gain but keep the front to back between 25 and 30 db.

Here is a four element antenna presented. These numbers were selected for ease of construction.



Quads A variation of the yagi, employing the use of full wavelength elements stood on one side to radiate through the loop.

Generally, the Quad has more gain for the same number of elements when referring to a dipole. Two elements, for example, have the approximatd gain equal to a three element yagi.

Listed below are the numbers required to construct up to a four element beam antenna. These elements have been tested and are values that will work in all cases. Optimization of this antenna can be done but the gain values shown are close and easily duplicated.

	2 elements	4 elements
Reflector	1030 / Freq in Mhz	1030 / Freq in Mhz
Driven	1005 / Freq in Mhz	1005 / Freq in Mhz
Director 1		979 / Freq in Mhz
Director 2		955 / Freq in Mhz
Element Spacing	.15 x lambda	.20 x lambda
Gain	7.0 Dbd	9.0 Dbd

Information for those who wish to persue this antenna is vast. Much study has given to this antenna and it's merits. Many excellent publications exist for those who wish to go further than the scope of this text. At the lower spectrum of the amateur bands the SQUARED off element is acceptable. When dealing with Two Meters and up one should make the elements round if one wants the most from the element. We all have seen squared off elements at the 144Mhz spectrum but the purest will tell you that it's substandard to do things this way. At 220 Mhz and up it's almost a must for proper operation and gain.

Verticals:

These antennas are really nothing more than a quater lambda element stood on end and fed from the bottom. One quarterwave element is pointing into the air and the other quater wave is imaged into the ground plane or earth ground is the other half of the dipole. 234 / fMhz will yield a vertical that will work well at any band if used against EARTH ground or an imaginary ground (counterpoise). Earth ground could be many rods driven into the earth to make connection with the true ground. But in most cases the conduction of the earth around our antennas is poor to terrible so we must put lengths of wire into or on the ground around the antenna to create an artificial grounding system. These work very well and should always be considered when installing an antenna of this type.

EDITOR'S NOTE: Conversions, terms, etc. (page 5) will appear in September's issue. Please save this information and take to the meeting that Rick will be speaking on antennas. Thank-you.