CROSSTALK

News Bulletin of the TRW Amateur Radio Club

MEMBER ARRL CLUB NO.1658; MEMBER LAACARC
W6TRW REPEATER: 145.320/-.6 (PL 114.8 HZ)
UHF: 447.000/-5 (PL 100.0 HZ)

CALENDAR FOR LATE MARCH AND APRIL, 1990

Every	Tues.	EOC project meeting in R3/EOC (Meet on Wed.instead on week of Club meeting)	Noon
Every	Wed.	Emergency Communications Team Check-in	Noon
Every	Friday	Club breakfast at Cafeteria, Bldg. S	7 AM
Mar. 27	Tues.	Club Meeting: E2-1200	Noon
Mar. 31	Sat.	TRW/ARC Swapmeet: Marine & Aviation	7-11 AM
Apr. 03	Tues	EBM at Pizza Hut, El Segundo & Oceangate	5:30 PM
Apr. 14	Sat.	Deadline for Crosstalk articles	Noon
Apr. 24	Tues.	Club meeting: E2-1200	Noon
Apr. 28	Sat.	TRW/ARC Swapmeet: Marine & Aviation	7-11 AM
Apr. 27 - 29		Hamfest at Dayton	3 days

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President's Column ... March, 1990

On Wednesday 2/29/90 at 3:43pm PST, Los Angeles was jolted by a strong earthquake. Like most people, I was at work when the quake hit - in fact, I was in about the same spot in the lab as the October, 1987 earthquake (which had measured 6.0 on the Richter scale). Unlike the 1987 quake, though, this jolt didn't seem as strong or as lengthy, and so it didn't incite the same kind of panic that I had observed before - in fact, most of the people in my building (D1) didn't even leave their offices. Just to be sure, though, I went out to my car to find out what was happening.

We started up the emergency net on the W6TRW 2 meter repeater, and hams began checking in from all around Space Park. W6EKK reported building S was ok, WA2KDL and W6NHX reported building M4 was ok but the phones were dead, W6ZWS N6VMS KJ6GR and KA6TIW checked in from R5, E1, R6, and R3 respectively and confirmed that their buildings were ok. At this point it appeared that things were basically all right at TRW - no injuries, no major structural damage, no fires, no chemical spills, etc. Then the focus began to broaden to the surrounding area - there were checkins from KJ6AW at Hughes, N6RVC at Xerox, N6JLS at MacDonnell Douglas, N6RRY in Hawthorne, and W6KQI in Wilmington. They reported that things were ok at their locations as well. The phones were out in several areas, but otherwise it was beginning to look like the South Bay hadn't suffered any major damage. Several people QSY'd to monitor W6FXN on 145.46 Mhz and K6CPT on 145.30 (located on mountain tops, these repeaters cover most of the LA basin). They reported back every few minutes with information, and it began to look like the quake had been centered some distance northeast of LA, and that there was no major damage elsewhere - the downtown area was ok, there were no major fires, etc. By this time several club members had started for home, and reported that the freeways were ok - KA6TIW was eastbound on the 91, N6VMS was southbound on the 405, etc. Having confirmed at this point that everything was basically ok, we closed the net after about 20 minutes and people went back to what they had been doing.

I then went over to R3 to check in with the TRW Emergency Operations Center. They had been in telephone contact with the buildings around TRW and were watching the live coverage on television. I was pleasantly surprised to hear the tv announcer say that they were getting a lot of their information from ham radio operators! I presented my scribbled notes from the net and gave a status report, then we set up the club's 2 meter transceiver and continued to monitor W6FXN, K6CPT, and W6TRW for some time. There were further reports about the magnitude and epicenter of the quake - 5.5 near Upland. The freeways were open, but there were reports of rock slides in the mountain areas near Azusa. After about half an hour it appeared that things were under control, so we decided to call it a day.

In the weeks that have passed since then, I have been thinking about what took place, and would like to share some thoughts with you. What happened this time is probably representative of what will happen in a future event, so maybe something can be learned from it. Here are some of the things that I concluded:

(1) It's important to have some form of 2 meter capability with you (mobile or ht). If you are using an ht, it's important to have a back up battery pack or a cigarette lighter adapter in your car.
(2) The 2m repeater is an important communications link in an emergency. For this reason, we are planning to harden the E2 installation and put up a backup repeater at R3, as part of the EOC project.
(3) Whoever shows up on frequency first should go ahead and start the net. For this reason, we are recruiting more people to serve as net control for the Wednesday noontime emergency net. Perhaps we could pick some random times when there is no scheduled net control, to give people practice at serving as the impromptu net control.
(4) After initial checkins, designate people to go monitor specific repeaters, police/fire frequencies, KNX, etc. and report back periodically.
(5) There was a broadening focus of attention, as far as the damage assessment was concerned, from TRW to the South Bay to the LA basin.
(6) One universal reaction was an urge to check on one's family and property. If the freeways are closed, and if the phones are dead, this may be one area where the club can help - by providing health and welfare information via amateur radio. This process would be much easier if you have 2 meter capabilities at home, and if someone else in your family has a ham license. Having a good ham station at home will also help if a quake hits at some time when you aren't at work (nights, weekends, etc).
(7) For the ham radio portion of the EOC to be effective, we will need operators. If you work in or near R3, or live in the vicinity of Space Park, please drop me a line. You can and will make a difference.

After a major disaster, some of our strong points would be our ability to provide the following:

- Battery powered emergency communications.
- Operators trained in emergency communications procedures.
- Operators who can also deal with technical adversity (broken antennas, radio problems, etc.)
- Reliable information which can be used during the crisis intervention phase.
- After the initial crises have passed, the ability to pass health and welfare traffic, both within the LA area and outside. For most people, this may be the only link with the outside world for several days.

Lately the set up phase of the EOC project has been keeping us pretty busy but, once we finish building the hardware, we will be looking more closely at all of this. The next phase of the club's involvement in the EOC project will be to look for opportunities to gain more experience in emergency communications. There are ways to do this and still have fun at the same time, like Field Day. Even the Swap Meet, as well as being a lot of fun, also provides valuable training in areas like directing traffic and crowd control. (If you can handle 2000+ bargain crazed hams, you can handle anything!)

Anyway, enough for now. This is an important topic, one that everyone has been reminded about lately, but it isn't the only thing that the club is doing. It seems like the prudent course would be to prepare ourselves as well as possible in advance, exercise the hardware and the operators on a regular basis, and continue on with other things. I'm interested in your feedback on any or all of this - drop me a note at D1/1302, call me at 213-375-1219 or send me e-mail on the W6TRW BBS.

73, C U Tuesday! ... de Jeff n9cza

(Editor's note: It was reported that more than 5,000 incoming Health & Welfare messages were handled within the disaster area via packet radio alone during the N. Calif. earthquake last Oct. More than 6,000 messages were handled by Red Cross Emergency Communications in Alameda County the first week and more than 15,000 in total. Imagine what would happen if LA had a big one! Have you joined the TRW/EOC team & ARES/RACES to help yet?)

TRW ARC News ... March,1990

Club meeting

Is at noon Tuesday 3/27 in E2/1200. The presentation this month will be on the Courage Handi-Hams program.

St.Patrick's Day party

The club's annual St.Patrick's Day party took place on Friday evening 3/16 after work at Shakey's Pizza in Torrance, and a good time was had by all. About 30 club members, xyl's and harmonics joined in the fun. Bill K6AWO was in charge of door prizes and beverages, and he rose (although somewhat unsteadily) to the occasion. This was the first night out of the house for Jack AE9I and his wife, after their son was born a few weeks ago. They traded battle stories with Chris WA2KDL and his wife, who brought along their 4 month old daughter. The pizza and beverages and laughter flowed for a few hours, then the last of the die hards left by about 8:00 (hmmm, how do I know that??) Anyway, it was a lot of fun. We should do this more often!

Field Day: coming soon to a hilltop near you!

Speaking of fun, Field Day is only 3 months away (June 23-24). Don W6SQF reports that Friendship Park in San Pedro has been reserved for the club, and he is in the process of organizing the different band teams. The club is planning to operate 7A again, so if you would like to be a band captain, operator, logger, chef, etc. contact Don at X28829. This month after the swap meet (3/31) we will be doing an inventory of all our Field Day equipment in Building 65. Lunch will be provided, so drop by and join us.

New BBS news group

We have added another news group to the W6TRW BBS, "ham-humor". Have you heard a good ham radio related joke lately? Post it to the BBS and let us in on it! We may even print some of the funnier, less offensive jokes in the Crosstalk!

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Swap meet is looking for a few good hams

The club is looking for some extra people to help with the swap meet. Let me say up front that this is not always an easy job - if you work the full shift, you have to show up at 6am on the day of the swap meet, and stay until 11:30am or so. On the other hand, it's fun and exciting to be a part of one of the largest and best known ham radio swap meets in Southern California. I am constantly surprised at how many hams around the country have heard of the TRW Swap Meet (I had even heard about it in Indiana, before I moved to LA). The swap meet crew directs traffic and parking, rents spaces to the sellers, and monitors the swap meet area. The main job qualifications are a 2 meter ht, team spirit, and an ability to deal with the public. We are especially looking for extra help in April, as several of the regular crew members will be out of town that weekend. Also, if you are familiar with DBASE, we are looking for someone to help with the swap meet reservations data base. For more info, call Jeff at X25669. 73 es C U @ TRW!

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(Editor's Note: A group of hams in the South Bay area trying to buy portable generators at group rate for emergency use. Chuck, KN6H, started the investigation a few months ago and after an exhautive search, the Onan-Cummins line of low-noise generators was selected with very good pricing. Its Standard and Pro Series range from 1.4 Kw ($494 tax incl.) to 6 Kw ($1,518) units are available with 35 to 40% off list. However, a minimum order of 40 (mixed units) must be in by April 13 to Don Caspers,KB6PUY. Further info. may be obtained at the Torrance Amateur Radio Assn. check-in time every Tues. & Thurs at 1215 PM on 144.400 Mhz simplex.)

If you catch the battery sales right, you may get alkaline cells with rebates (recommended for emergency use when AC power is down) at the price of that of carbon zinc, e.g. AA type @<20 cents, C & D @<50, and 9v @<75.

This month, we like to thank Bill, KJ6GR, for sharing his experiences in searching for an antenna to fit his requirement and environment. (see his articles in this issue) If you like to see more technical articles in Crosstalk, write to our Training Chairman Bill Shanney at R6/1118 and state what phase or subject you like to read.

MY EXPERIENCES WITH HF ANTENNAS by Bill Shanney, KJ6GR

I started in ham radio (March '88) with a triple dipole for 20, 15, and 10 meters. A simple antenna was chosen to prevent complaints from the XYL regarding the appearance of our house. I have since graduated to a three element tribander on a 45' homebrew tower. This article is a summary of the antennas I tried along the way.

The dipoles were only 20' off the ground and performed OK for stateside contacts and easy DX. The itch for a directional antenna was strong but due to space restrictions on our small lot, it appeared difficult to put up a full-size quad or Yagi tribander. I heard quite a few good remarks on the air about the Butternut HF5B butterfly beam and decided to give it a try. The cost was moderate and it could be rotated with a TV rotator. Assembly and alignment of this antenna was straight-forward although the latter was time consuming. Better preparation would have simplified this tuning but I was in a hurry to try it out.

I mounted the butterfly beam on a chimney mast about 25' off the ground. Butternut advises placement up at least 40' for good results. It was a significant improvement over the multi-dipoles. The performance was about one S-unit better on all bands, plus I now had the ability to use the front-to-side isolation to null out strong signals. At this low height the radiation angle was too high for serious DXing and the /b and f/s isolation suffered dur to ground reflections.

The ability to operate on the WARC bands was nice and the bandwidth was as follows:

Band	20 M	-- 2:1 VSWR BW:	250 Khz
	15		Full bandwidth
	10 M		Full bandwidth

This mini-beam is only 12' long and din't cause the XYL or neighbors to complain about its appearance. It could easily be mounted on a tall TV mast or pushpole mast to raise it up 35 to 40'. For those hams preferring stateside ragchews or those with space restrictions, the HF5B Butterfly beam is a good choice.

For those interested in the history of the Butterfly design, see The Old Timers Notebook, QST, April 1980, p.59 and 60.

I quickly yearned for a better DX antenna. After a lot of reading and on the air discussions, I deceided that a vertical was worth a try. The Cushcraft R4 vertical was chosen since it is a half-wave design which doesn't require an elaborate radial system. This antenna had an excellent review by Lew McCoy in April 1989 CQ magazine.

My R4 was assembled and installed in less than an hour. The VSWR was (1.5:1 on all bands (20, 15, 12, and 10M). I was very happy

with the performance and worked lots of DX with it. I left the HF5B up and ran comparisons for a few months and the R4 was consistently one or two S-units better on DX but ut is only a fair performer on local contacts. I added the 17M conversion kit which reduced the bw a little on 15M but otherwise works great. If DX is your main interest and you have a space problem, the R4/R5 is an excelleent choice. Mine was mounted with its base at 20'; better DX performance should be obtained by raising it higher.

I still had a desire for a more directional antenna. An article on the construction of self-supporting masts using iron pipe appeared in Ham Radio (July 1989) and it really got me thinking. I read the article several times while on vacation in Hawaii and within a few weeks, I had a mast design and a mounting scheme that overcame all obstacles.

The base of the mast rests on our patio cover, a 12 x 12 to distribute the weight was all I had to add. The mast is hinged at the roof level of our two-story home. Raising and lowering is accomplished using a boat trailer winch and with the tower tilted, the antenna can be worked on while standing on the roof.

To keep the tower light weight, I needed a light antenna with minimal wind surface area. The Cushcraft A3 fits all my requirements and is moderately priced. An Alliance HD-73 rotor was used for this light tribander and has performed well even on a windy day.

The A3 proved to be easy to assemble. After some discussions with the folks at the factory, I custom adjusted the elements to give me a little more useable bw on 10M. I like CW but my son Jason, KC5FNO, prefers sideband.

The mast and antenna went up without a hitch. Although the mast is designed to be self-supporting, I have it guyed just below the rotor using MIL Spec Dacron rope just for good measure. My investment in the tower and its associated hardware is about $250 and about two days' labor. The best part is the performance. Signals I could barely discern using the R4 vertical were now Q5. The additional height (45' for the beam vs 20' for the vertical) plus the antenna gain makes a 2 to 3 S-unit difference.

A word about tribander gain is in order here. Although gain for the A3 is 8 dB, this is the theoretical gain for a 3-element Yagi and does not take into account the loss in the traps. At 20M, the theoretical radiation resistance for this design is around 25 ohms. The measured resistance at the input to the antenna is close to 50. The resistive losses are on the order of 3 dB which yields a true gain of about 5 dB. I'm not complaining but I think it is important to understand that the published gain figures for most tribanders are not what you are getting and when asked, the manufacturers will admit it but it is too expensive or they are unwilling to perform gain measurements on their products.

My A3 is tuned for the CW segments of the bands with VSWR as follows:

Freq in Mhz:	VSWR:
14.0	1.2
14.3	2.0
21.0	1.7
21.35	2.0
28.0	1.3
29.2	2.0

Even at the upper band edges the VSWR is <3:1, which is easily tuned using the built-in tuners in many modern transceivers.

I'm presently satisfied with my HF beam for 20, 15, and 10M. I just replaced my 40M inverted V with a full-wave loop. I'll write about that in the near future. (KJ6GR)

BOOK REVIEW BY BILL SHANNEY,JR., KJ6GR ON THE ARRL ANTENNA COMPENDIUM, VOL. 2

Since I really love to read about and build antennas, I couldn't resist buying this book at the December TRW/ARC swapmeet. To put the punchline up front, this is an excellent collection of articles covering a wide variety of current antenna topics. Many new ideas are presented for those who are vertical antenna fans including measured design data, steerable arrays, a multiband counterpoise, 5/8-wave antennas, folded mono-poles and unipoles.

Some interesting papers on Yagi analysis and new construction ideas are included as well as coil shortened quads and half loops for those of us with limited space. Multiband and broadband wire antennas are also well represented in this compendium. Several interesting portable antenna ideas are presented.

One of the most interesting articles I read concerned controlled current distribution antennas where the conductor is broken into many sections coupled with capacitors. Rounding out this book is a collection of articles on antenna selection, modeling, testing, matching and baluns. The book ends with two papers on solar activity and ionospheric effects.

I have read most of the antenna books currently in print and can honestly say that this compendium contains a wealth of new material and ideas. I highly recommend it to all those interested in antenna theory and construction.

How I got into Radio -- by W6IOW

Like any teenage boy, I was fascinated about the box called "radio" when I first saw it at my friend's house and had always wondered what was inside it -- that had a human voice in different languages. I asked my mother, in fact, I had to nag her later, to get me one. (My father died when I was about 4, I was told, and I had no idea how much my mother was making as a school teacher supporting a family of us 4 then in 1939.)

After many months, she finally bought a BC model for local reception. After logging the few local so called "long-wave" stations, I was ready for a "short-wave" one, not knowing how much additional my mother had to work for it. This was before WWII in Hong Kong. A SW radio was considered as a luxuary item in 1939 then. Anyhow, like all mothers who love their children so much, she, after awhile, ordered one for me. When it came I noticed that it was made in Shanghai, China -- not like those foreign made units by RCA, Zenith, Philips, GEC, PIE, and others that our rich friends had. For me, I was happy with this new toy!

Here, that's where the fun started. After listening to BBC, Deutschland, Tokyo, Manila, etc. for a while, I was ready to venture into the unit itself. I was glad that it was not an expensive one, otherwise I wouldn't have dared to open it up and look at the guts. Upon opening it, I saw 5 valves, some cans, a hunk of iron,a speaker and a round dial indicator top-side, with a nest of wires with some "firecrackers" underneath! Was that all, I asked myself, that it took to hear the Big Ben! Those funny looking cans all had a screw on the top that looked kind of loose to the touch (itchy hands, you know). How come they were not tightened at the factory -- screws should be tight and secured, right? So I took a screwdriver tightening up every one and said, "Now, it should work much better!" Turning the set back on, I was surprised to find that it was totally dead! I checked and rechecked, even banged on it and it was no better. Then I thought it must had to do with those myterious screws that I had tightened. I began to loosen one at a time and you know it -- it was just impossible for someone who didn't know anything to get back a combination that worked!
I was sort of in a panic mood then and I didn't know how to tell my mother. At dinner, in casually talking with her,, I found out that the radio was bought from a big, dependable department store with its own service dept. downtown. So I took it down to the store myself, (not telling my mother, of course, in order not to give her a heart attack) and asked to talk to a serviceman. That young fellow was very nice and sympathetic (perhaps he, too, had run into the same situation before!). He invited me to his small and crowded shop upstairs. He tried to explain what and why he wasdoing to get it working with all the external wires attached to the unit, and of course I was in a blank. Thereafter, I picked up a book called Radio Physics Course by Gharadi(?) in a second-hand bookstore (English books were very expensive by our standard). I read and underlined each chapter and that was how I got started. Thanks to my mother and her "inexpensive" radio so that I could open it up! Indirectly, she opened up a career for me too; thanks again; Mom!