



Cathay Newsletter November 2007

www.cathayradio.org

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Mission: The Cathay Amateur Radio Club is basically an active social club of Ham Radio Operators and their spouses

Monday Night Net Time: 9PM PST Frequency: 146.67MHz -600KHz PL85.4 and 442.70 +5MHz PL 173.8 The repeaters are linked. The Monday night net is the best way to find out the latest club news. All check-ins are welcome.

Message from the President: *Edison Fong, WB6IQN*

It's already November. I all had a great time seeing everyone at the last swap meet for the year at DeAnza College. I was also impressed with the big crowd at Pacificon 2007. There was a lot of cool products at this year's show and just the great education one gets from attending the technical sessions is worth the price of admission.

In this newsletter we have a summary of Pacificon, a history of the LED (light emitting diode), how Cathay members handled the communications for the Aids Walk of San Jose and the details for the next HAM CRAM session.

The next big event will be the Christmas Party in Sunnyvale. This is VERY KID friendly event. We usually get about 60+ attendees. The format is potluck. My wife will bake a gingerbread house for the kids. The ham techies can tune up their radios in my shack. This is tentatively scheduled for Saturday the 15th of December. More details in the next newsletter.

Also, elections are coming up. We need people to run for President, Vice President, treasury, etc. Also new board members that can help out with the club.

LEDs 101 - Ed Fong WB6IQN

We all use LEDs on a daily basis. It is taken for granted. LEDs were originally used for displays in the 1970's. Initially, they were limited to red in color and weren't that bright and very expensive. I remember paying \$3 for a red LED back in 1975. Remember, the HP35 calculator that sold for \$400 in 1972? It was one of the first calculators to use LEDs. They were very expensive but they were fast responding and consume (in comparison to other display formats at the time) low power. The other alternatives at the time were mechanical displays (which were cumbersome and unreliable), gas nixie tubes (expensive), incandescent RCA Numitron tubes (cumbersome and poor reliability), gas/fluorescent displays (which required high voltage), and .CRT displays. So when red LEDs were introduced on the market in the 1970's in watches, calculators, multimeters, etc., they were big a hit.

Today, we used LEDs everywhere and they are very low in price. About \$0.20 per LED, often less for surplus or low intensity. This did not evolve over night. Here's a small history of the LED.

The phenomenon of electroluminescence was first observed in a piece of Silicon Carbide (SiC), in 1907 by Henry Joseph Round. The yellow light emitted by it was too dim to be of practical use and difficulties in working with Silicon Carbide meant that research was abandoned. Further experiments were carried out in Germany in the late 1920s by Bernhard Gudden and Robert Wichard Pohl, using phosphor materials made from Zinc Sulphide doped with Copper (ZnS:Cu), although once again, the low level did not make them practical.

The first visible (red) light LEDs were produced in the late 1960s, using Gallium Arsenide Phosphide (GaAsP) on a GaAs substrate. Changing to a Gallium Phosphide (GaP) substrate led to an increase in efficiency, making for a much brighter LED. By the mid 1970's Gallium Phosphide (GaP) was used as the light emitter and was soon producing a pale green light. LEDs using dual GaP chips (one in red and one in green) were able to emit yellow light.

The use of Gallium Aluminium Arsenide Phosphide (GaAlAsP) LEDs in the early to mid 1980s brought the first generation of superbright LEDs, first in red, then yellow and finally green. By the early 1990's ultrabright LEDs using Indium Gallium Aluminium Phosphide (InGaAlP) to produce orange-red, orange, yellow and green light had become available. It is through some of this technology that the Sony Jumbotron was derived. This is the BIG screen you see at PacBell Park and other stadiums.

Ultrabright blue Gallium Nitride (GaN) LEDs arrived in the mid 1990s, with Indium Gallium Nitride (InGaN) LEDs producing high-intensity green and blue shortly thereafter. The holy grail was white light. Early attempts in the 1990's used a combination of red, green, and blue to produce white light. This initially work, but with 3 LED's under one lens, their efficiency was low and the cost was high.

Today's bright white LEDs are based on a different principle. They are quite efficient and are based on ultrabright blue LEDs where the light emitting chip is coated with fluorescent phosphors. These phosphors absorb the blue light from the chip and then re-emit it as white light. This is similar to a fluorescent bulb except that in a fluorescent bulb is ignited with high voltage. This same technique has

been used to produce virtually any color of visible light and today there are LEDs on the market which can produce "exotic" colors, such as aqua and pink.



Look at all these colors that can be generated from LED's. The LED's generate the colors directly and thus no color filters are needed. Thus the overall efficiency is far superior than the old conventional techniques using a white bulb then applying a color filter to achieve the desired color.

The other amazing part of the LED story is the drop in cost over the last several years. Red LED's can be purchased for \$0.10. I remember in 2002, just five years ago, a single white LED was selling for about \$4.00 each. Today, they can be bought for about \$0.25 each.

To be continued

Pacificon 2007 – *Summary*

Another great conference this year in San Ramon. The weather was great and there was record attendance. All the hotel rooms were booked. They gave a great deal to conference attendees at \$85 a night for a Marriott's with a Jacuzzi, swimming pool, gym, HDTV, etc. The retail was \$240 a night, so no wonder it all sold out. Marriott's did a great job providing for very nice meeting rooms. During the Friday sessions they even provided for free drinks, cookies, snacks, and brownies.

The show itself was great with major vendors showing their products. This included Icom, Yaesu, Elecraft, Kenwood. There were even some new companies there that I had not seen. LED Wholesalers.com (Wayne Wong) was there with all the latest and greatest LED products. I'm trying to get him to be a member of the club. I saw at least 10 Cathay members there. Bob Lai KN6QP, Nelson Doon AD6XZ, Joe Lee W6DOB, George Froberg NR6I, Tony KR6EG and Connie KF6WEA Halog, David Chan WX6X, David KF6FPO and Judy Chan.

You also got to meet some famous people, like Dean Straw (author of the ARRL antenna book), Doug Hendrick (world famous QRP expert), Tom Schilling (President of Force 12), Dennis Monticelli,

(CTO of National Semiconductor). So if you missed it this year, set your calendars for next year. It is always on the 3rd Saturday of October.

The Friday Antenna Forum organized by Paul Howes WA6GYG was totally sold out. They had to bring in chairs. See the pictures for yourself. I gave a talk on the, "Workings of SWR Meters". Just a great crowd of nice people.

Aids Walk of San Jose - Ed Fong WB6IQN

The annual Aids Walk in San Jose took place Sunday October 21 at Discovery Meadow in San Jose. Once again, the organization asked Cathay Members (Ron KI6AZB, Inho KG6RLT, Mike Wright K6MFW and Ed Fong WB6IQN) to provide for communications. Inho was at another volunteer event with his EMT group and Ron came down with a cold. So it was up to Mike and myself. See how important backups are. We got there at 6:15 AM that Sunday morning in pitch darkness at Discovery Meadow in San Jose. The park lights were off and there was no moon, so it was total darkness with the exception of Wayne Wong's LED flashlights that I picked up at Pacificon. It was also really cold until the sun came out. We set up a base station using a Motorola Syncom 10 and a PT500 as a backup. The base station antenna was a single band ribbon J-pole in a PVC pipe. The radios we used were Motorola HT1000's, P10's, SP50's, MT500's, and HT220's. The walk is a 10k (6.2 miles) walk so our radio coverage needed to be about 3 miles. With the commercial Motorola's, that was no problem. See the pictures below. If your organization needs commercial radios for an event, please contact Ed Fong – edison_fong@hotmail.com. It is all free of charge to members. If you wish to help out next year for this event, please contact me. It is very rewarding.

I heard there were over 3000 walkers so that was a success. **Panda Express** and **Subway Sandwiches** provided full meals for helpers and walkers. For snacks, there was **Starbucks** and several other smaller venues that provided donuts, bagels, and beverages. All free to walkers and helpers. If you like to participate next year, their website is www.WalkforAids.org.

Pacificon 2007



Nelson AD6XZ, Dave WZ6X, Ed WB6IQN Loyld, Bob KM6QP, and Paul W6NDA.



I took this picture during the break. The Antenna Forum was all sold out with standing room only. Sign up early next year. It's an all day seminar and only \$10.



Wayne Wong of LEDwholesalers.com. He is interested in becoming a member.



I caught Bart Lee KV6LEE shopping around.



Gordon Yee KI6UH and his daughter Brianna of QRZ Engraving. Another good potential member.



Dave KF6FPO and Judy attending a session on HAM radio in China.

Aids Walk 2007



First Aid Team and communications at the Aids Walk in San Jose.



About 3000 people was the best estimate.



Here are the 25+ plus radios we used on the commercial MURS channel.



This picture was taken just at sunrise at our booth and it was really cold. Pictured is Mike Wright K6MFW.



Our workhorse was a Motorola Sycom 10. This a fully synthesized radio with self contained batteries that will run for 40 hours in emergencies.



There was plenty of donated food everywhere.

HAM CRAM Session – Tell your friends *Dave Gomberg NE5EE*

EARN YOUR RADIO LICENSE IN ONE DAY!

Saturday, November 3, 2007

8:45AM SHARP! - 3:00PM

San Francisco County Fair Building Hall of Flowers – Rec Room

9th Avenue and Lincoln Way

There will be a General cram for Techs same place & time.

Ample free parking. Great lunch restaurants nearby.

Bring 2 IDs (one with picture), a pencil and

\$20 cash for Technician study materials and test OR

\$40 cash for General study materials, lecture and test OR

\$14 cash for testing only (general, extra, Morse tests available too)

8:45AM Study checkin, Don't be late. Drop ins OK. Test only 2PM.

8:50 Beginners' tips

9:00 Self-study starts

1:30 Exams begin

No advance preparation needed for beginners, we do it all in 6 hours. General exam class at

9:15AM (if you are already licensed).

Questions? hamcrams.com

Next test date January, 2008

Passing this test will get you a ham radio license from the FCC good for 10 years. You will be able to use:

- local repeaters for Bay Area communication
- Echolink for Internet-based radio
- satellite and moon-bounce
- international shortwave frequencies for global communication!

Come and join the great world-wide community of ham radio.