MTARA NEWS

President Lorna's KJ6GFS Message

Hello, MTARA members ~~

Even though Spring officially lasts until June 21, I think it's safe to say that Summer has made an early appearance. We're entering into the height of what has become our year-round fire season, as evidenced by the two Hesperia fires that occurred earlier this month ~~ urgent reminders to all of us to be extra careful and vigilant. If you see something, you know what to do.

Field Day, on June 25 at the Masonic Lodge in Twin Peaks, is coming right up. It will be great to welcome back the general public, allowing them first-hand experience with ham radio. It's particularly gratifying when parents bring their young children to the event, often awakening in those kids an early interest in amateur radio. We're hoping for participation by many MTARA members, who will transmit their RF (Really Friendly) energy to all those potential young hams !

The Lake Arrowhead Fourth of July fireworks display (on Sunday, July 3) is another annual event at which MTARA members serve the community by providing vital radio communications from numerous strategic sites all around the lake. Tracy (WM6T) reports that the volunteer positions have been adequately filled. If additional help is needed, he'll notify us via email.

MTARA is also participating in AMVO's (Association of Mountain Volunteer Organizations) recruiting day, scheduled for July 23 at Our Lady of the Lake Parish Hall. Stan Howe (KI6YLG) is organizing this event, which will be an opportunity for all the mountain organizations that rely upon volunteers to meet those in the community who wish to volunteer their time and talent to worthy causes. Watch for more information soon.

Our next regular MTARA meeting will be held on Tuesday, July 5, at the Lake Arrowhead Community Presbyterian Church. It will be the first in-person club meeting in many months. I look forward to it.

Seven Three, Everyone ~~ Lorna

Officers

- **President:**
Lorna Polley, KJ6GFS

- **Vice-President:**
Chet Olson, AE6CO

- **Treasurer:**
Nancy Karlson, K6CUB

- **Secretary/Newsletter**
Debbie Johnson, WB6LVC

- **Ed/Membership:**
Tracy Lenocker, WM6T

- **Past Presidents:**
John Snedden, KT7P

Vic Marquez, KK6WKI

The Rim of the World ARES group is an ARRL affiliated organization and part of the Mountain Top Amateur Radio Association

Monthly Club Meetings

Club meetings are held on the first Tuesday of each month. The meeting begins at 7:00 p.m. and lasts until approximately 9:00 p.m.

Our meetings are open to everyone; so bring a friend, and keep the hobby growing. There is always a presentation that will pique your interest and add to your knowledge.

All upcoming meetings, beginning with July 5, 2022, will be held at the Lake Arrowhead Community Presbyterian Church, 351 South State Highway 173, Lake Arrowhead, CA 92352

Membership

Membership in MTARA is open to any individual interested in learning more about Amateur Radio. An FCC issued license is not required, but is encouraged. Membership is on an annual basis, running for the calendar year. There are no prorated membership fees. Club fees are $20.00 for a single membership and $30.00 for a family membership. The necessary forms can be found on the club's home page @ MTARA.club. Current members only need to send in their dues to MTARA, PO Box 2441, Lake Arrowhead, Ca. New members will need to download and send in their forms and payment to the same address.

TREASURER'S REPORT

Our ending May Balance was

$11,484.00

73, Nancy K6CUB

Local Weekly Nets

	Repeater	Time	Activity	Purpose
Monday	MTARA—2	7:00 p.m.	Weekly Check-In	MTARA News
Monday	144.330 MHz	8:00 p.m.	"Gordo Net"	Simplex Readiness
Tuesday	MTARA—5	7:00 p.m.	"Debbie Net"	Educational Topics
Wednes-day	HF	7:30 p.m. First Wednesday	7.223 MHz	Band(s) Status
Friday	MTARA—5	5:00 p.m.	YL Happy Hour	It's Friday
Daily	CBARC	7:00 a.m.	Tech. Net	Elmer Sessions

Upcoming Calendar 0f Events

- June 25—Field Day at the Masonic Temple in Twin Peaks
- July 3 (Sunday) - Arrowhead Lake Association 4th of July Fireworks
- August 5—Mountain Top Days Parade
- August 6—Tour de Big Bear
- August 19-20 (Friday and Saturday) - Kodiak 100
- October 8—Big Bear Gran Fondo

Dayton Hamvention 2022—Excitement   by AA6GJ

Many of you know that I like to teach Ham Radio Classes, and many of you know that I work with a group called the West End Amateur Radio Group. Our Group has two main goals: 1. Pay it forward by teaching Ham Radio Classes, and 2. Provide personnel and equipment for the Baker to Vegas Challenge Cup Relay Race. I wrote about our Baker to Vegas adventure in last month's Newsletter. This month I would like to tell you about the former; paying it forward by teaching ham radio classes. Our group is planning to teach a General Class Course starting on July 6th, but that's not really what this is about.

It all began with an email from Gordon West on May 5th that went something like this: "Gary, can you go direct with Natalie right away about the free classes you do, that she will promote! She was at Quartzsite, with 340,000 Tik Tok views.
Also, CC me so I can send it to Josh, our YouTube host for Ham Nation."
Well, let me tell you, this got my attention. So, I did just that and I got in touch with Natalie Gray who has become quite famous on TikTok as "GlamHamRadio". Here are a couple of her videos. I'm sure you will recognize a familiar voice in one and a familiar person in the other. Click on these links and you will see what I mean.
https://vm.tiktok.com/TTPdbvUeGh/ and https://vm.tiktok.com/ZTdbvh4Nq/
Anyway, she was excited about possibly making a video about our classes to spread the news around the internet in TikTok, and possibly do something on Ham Nation some day.
Then I got to thinking all of these people will be at Hamvention 2022, maybe I should figure out a way to get there, too. I remembered that I had enough airline points for me, but not Debbie :(, to get there. Debbie, being the good sport that she is, said that it was alright for me to go play at Dayton. She needed to stay home and get ready for our Hawaii vacation that was

happening the weekend after Dayton. Wow! This is getting crazy! One thing led to another, and lo and behold, I was at my first Dayton Hamvention!!


Once I got there and got oriented, I spent a lot of time at the W5YI-VEC booth with Gordo/WB6NOA, Allan Batteiger /WB5QNG, and Larry Pollock/ NB5X. I spent a few hours with Allan getting up to speed with HamStudy.org and ExamTools, the online Amateur Radio Examination System. This method is clearly the wave of the future. As the saying goes, "Necessity is the mother of invention." Because of COVID 19, online testing has been the only way amateur radio license applicants have been able to test, get their upgrade or callsign, and get on the air. Literally thousands of applicants have been licensed using this method. Most importantly, this operation follows all of the rules. It is safe, secure, trusted, efficient and a convenient method for administering Amateur Radio Examinations!

I have become one of the hundreds of CVE's to join their ranks and begin training. I have been included on three exam sessions, so far, and, in my humble opinion, all of the CVE's and VE's I've worked with have been a stellar representation of the future of ham radio and ham radio exam administrators. I can't wait until I have enough training under my belt to dare to run my own sessions, but very soon. Larry, whose back is to the camera, is training the many VE's who visited the booth who were interested in ExamTools.

I also had the honor of working with Gordon West at the booth. He was showing and promoting the latest Technician Class License Manual, and signing many autographs. He was also helping me to promote our group's online licensing classes. I had brought several fliers and business cards which Gordo kindly stuffed into his books as he sold them and signed autographs. It was quite an honor for me to work with him, definitely a moment in history for me. Gordo had this sign up at the booth. Again, it was an honor to be on the same bill. Later in the day, I assisted Gordo with his Instructor Seminar. I had the opportunity to speak to the group about how using Zoom to teach ham radio courses is becoming quite popular, and how recording the classes via Zoom and then later uploading them to your website via YouTube or Vimeo helps to reinforce the concepts. It also allows students to be a part of your class across all time zones.
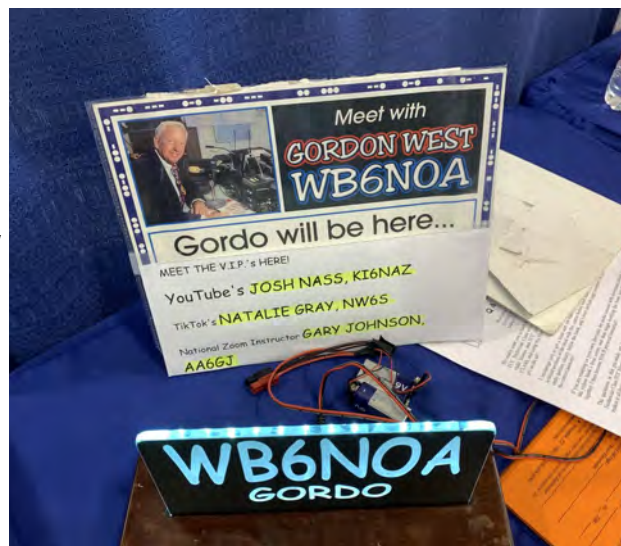
All in all, it was a fabulous experience for me to be a part of the almost 30,000 attendees at the largest hamfest in the country. I've put a little montage of photos below just to give a fraction of an idea of how overwhelming it was.

Then, there's these guys!!
What a Hoot!!
Thank you Gordo, Bob, Allan and Larry and all of the hundreds of volunteers that made Hamvention so successful.
Maybe, I'll take Debbie with me next year. I love you sweetie!

220 Net Topic Follow-up   by WB6LVC

     Hello to all of my 220 Net followers as well as all of the club membership. Back in September of 2021, one of my topics was about Ham Radio in literature. On that particular net, I discussed fictional stories that included Ham Radio in the storyline. A young teen book, written by Amelia Lobsenz, was titled: "Kay Everett Calls CQ." In the story, three young girls travel the country in a trailer. One of them was a Ham. At one point in the story, another Ham befriends them. She was a pilot as well as a Ham. This character was based upon a real-life pilot and an amazing YL- Theresa Korn. Theresa, or Terry as she was called, became a Ham at the age of 14 in 1941. Her call was K7JGU. She earned her pilot's license shortly after that. She was a 52-year YLRL member. Sadly, Terry passed away on April 9, 2020, at the age of 93. This was due to COPD and Covid.

     Terry was an extremely bright individual. She studied at the Carnegie Institute of Technology. After receiving her degree, she married Dr. Arthur Korn. They had two children. Along with raising the children, she worked alongside her husband at the University of Arizona for many years. They co-authored a textbook dealing with math for scientists and engineers. Terry also authored many other books in the fields of engineering and computers. She received many awards throughout her long and illustrious career. For more information on this outstanding YL, go to Theresa M. "Terry" Korn Women's Plaza of Honor or just Google her. You will learn so much more about her than I could share with you! 33
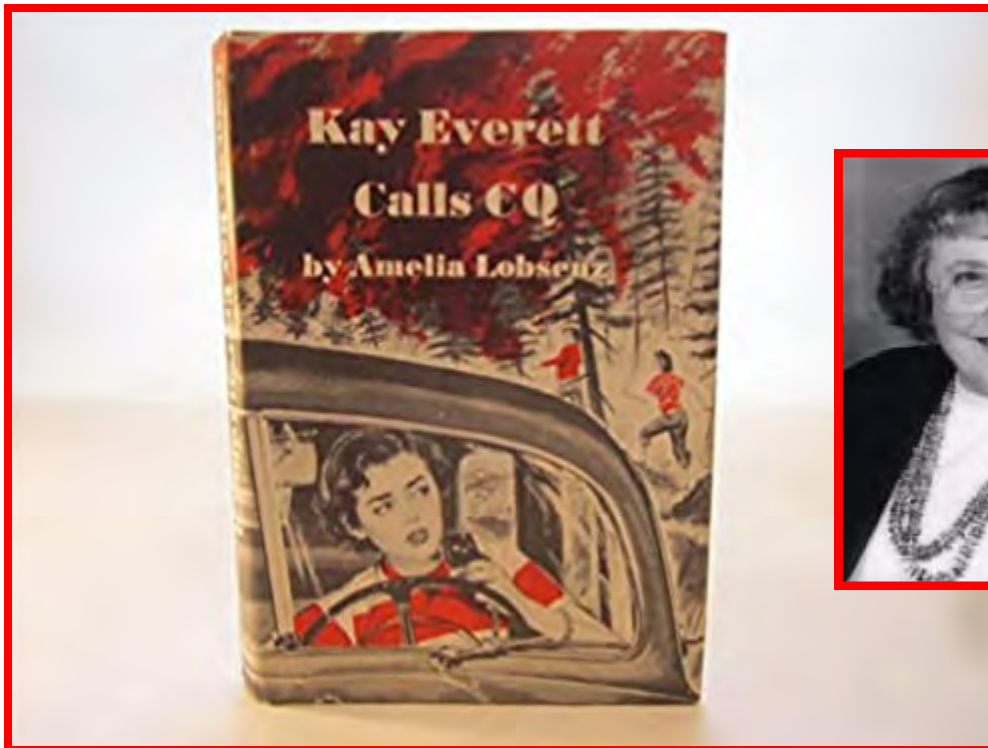
Ponder the Pool   by AA6GJ

. *Ponder the Pool* is my continuing column for the MTARA Newsletter. Every month, I will pick a question to *ponder* from one of the three FCC question pools, I'll try to explain it more, and review the concepts because,

<center>**"If you don't use it, you lose it!"**</center>

This question is from the February, 2021 Newsletter. Since I will be conducting a new General Class Course beginning July 6, 2022, I figured it was appropriate to revisit this concept. Anyone interested in joining our class, please go to https://GaryRJohnson.org for more information on how to sign-up

This month we will ponder this question from the General Class pool: Question No. G5B06

What is the output PEP from a transmitter if an oscilloscope measures 200 volts peak-to-peak across a 50 Ohm dummy load connected to the transmitter output?
So, what exactly are they talking about? What is PEP? The quick answer is Peak Envelope Power. Yeah right, so, does that mean that if I put *more* postage on my letter's envelope that will somehow make it more powerful? (This is where the laugh track comes in.) Seriously folks, Peak Envelope Power is defined as:

Peak envelope power (PEP) is the highest envelope power supplied to the antenna transmission line by a transmitter during any full undistorted RF cycle or series of complete radio frequency cycles. PEP is normally considered the occasional or continuously repeating crest of the modulation envelope under normal operating conditions. The United States Federal Communications Commission uses PEP to set maximum power standards for amateur radio transmitters. *

 *R. Dean Straw, ed. *ARRL Handbook For Radio Amateurs*. Newington, Connecticut: American Radio Relay League, 1999, p. 6.7
Well, *that's* as clear as mud! Let's dissect this a bit.
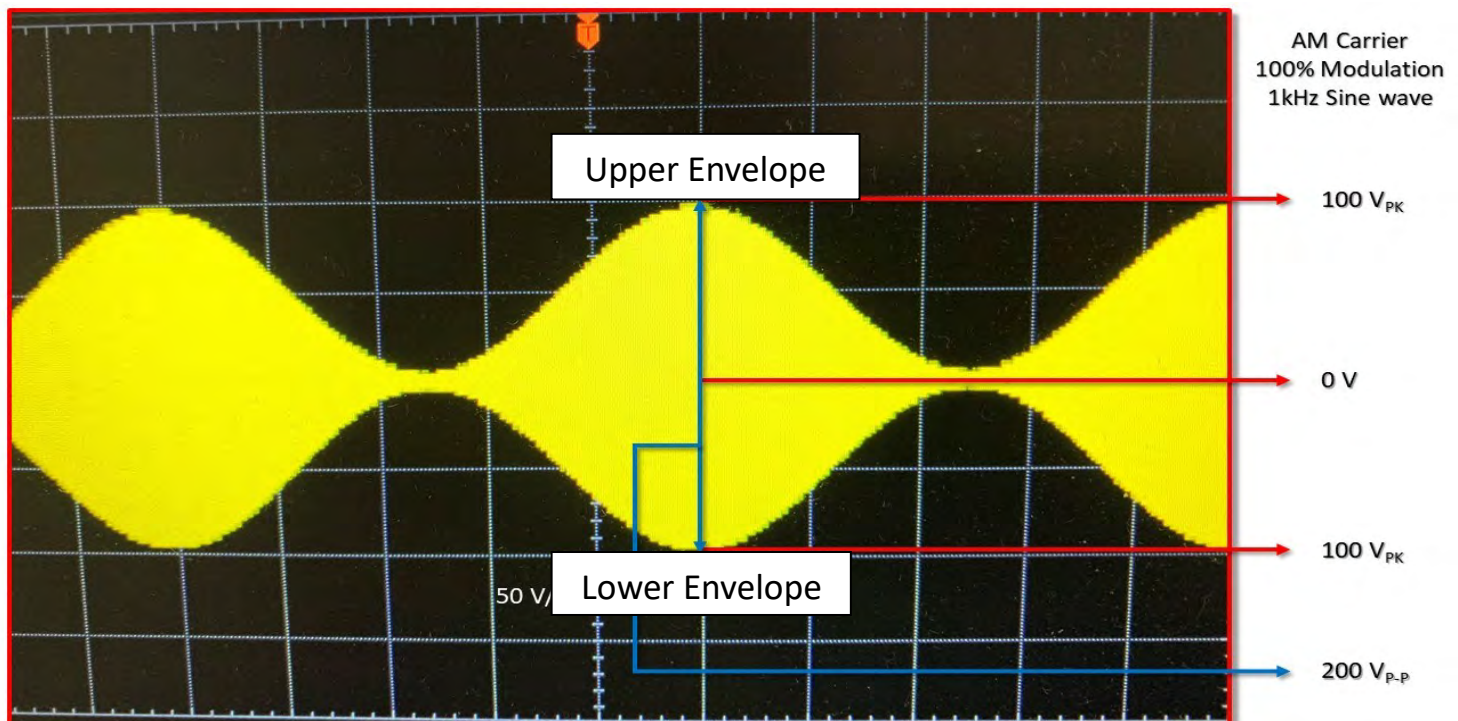
The envelope of an oscillating signal is the **smooth curve outlining its extremes**.

In the photo above, you see an amplitude modulated wave that consists of the radio frequency carrier wave (7.250 MHz), and the audio frequency wave (1,000 Hz) that is modulating the carrier. The carrier wave is shown as the "filled in" yellow portion. It looks like a sold color because the wave itself is much higher in frequency (7,250,000 Hz.) The 1,000 Hz. outer wave that creates the upper and lower edge (crest) surrounding the carrier wave is called the "envelope" because it *envelops* the carrier wave. If I were to go to my HF receiver, and switch it to AM, I would see the carrier on my S Meter. I would tune the receiver, so I had maximum signal strength. Out of my speaker, I would hear a 1 kHz tone. I could replace my sine wave generator that's connected to my transmitter with my microphone, and then I would be modulating the carrier with my voice, and I would hear that on the receiver.

OK, so, now we know what the waveform looks like and what it does. What does this have to do with PEP?

Well, this is where a little math comes in. You may have noticed that I was doing a little measuring as I created that beautiful waveform.

Remember this??

That's our friend Watt's Law where P=Power in Watts, I=Current in Amperes, and $P = IxE$ E=Voltage in Volts. Oh, wait, can I use this formula to determine PEP (Peak Envelope Power)? The question is asking for power, right? The answer is partially, yes. We also have to borrow some from Ohm's Law , where E=Voltage in Volts, I=Current in Amperes, and R=Resistance in Ohms. $E = IxR$ We just have to rearrange some of the letters.

In order to get peak envelope power, I need to borrow from each formula. We have to remember that PEP is power that is consumed by a load; that load is our antenna (in this case, our 50 Ohm dummy load). In ham radio, the characteristic impedance of our antenna is 50 ohms, and after we get inductive reactance and capacitive reactance to zero out, (don't worry about reactance right now, that's another *Ponder*) all we have left is 50 ohms of resistance.

So, what do we have from our oscilloscope measurements that we can use to figure this out?? In the photo we have a peak-to-peak voltage of 200 volts, and positive and negative peak voltages of 100 volts each. Now what? Well, we know from Watt's Law that Power equals Voltage times Current. We have an AC voltage in the form of peak-to-peak and peak voltage, but no current. P = *I* x E. So far, we only have E, and we don't know which one of *them* to use. We'll have to go back to our DC equations and start from there. Don't worry about AC for the moment.

P = I x E and E = I x R. We need something from each of them. The question is asking for Power. We will begin with P = I x E. Look at the "I" part of that equation. From Ohm's law we know that E = I x R. We need the I part of that equation to fit into Watt's Law. Here's how we get it. We divide R *into* R to cancel it out. What we do to one side of the equation, we must do to the other side. Next, divide R *into* E. The equation will look like this: $\frac{E}{R} = Ix\frac{R}{R}$. R cancels, and we're left with $\frac{E}{R} = I \ or \ I = \frac{E}{R}.$ So, now we know that $\frac{E}{R}$ is mathematically the same as I. We can work with that!

Let's start building our equation. $P = \frac{E}{R} \times E$ because $\frac{E}{R} = I$. Right? But now I've got two E's. What do I do about that? Don't panic!! We just do a little fifth grade math to fix that. We can multiply the fraction. (Remember this?) Don't forget that in order to multiply top times top and bottom times bottom, we must make the right side of the equation a fraction by dividing it by one. $P = \frac{E}{R} \times \frac{E}{1}$. Now we multiply the numerator times the numerator and the denominator times the denominator $(E x E = E^2)$ and $(R x 1 = R)$

Then we put it back together as a fraction like this: $P = \frac{E^2}{R}$. Ok, so now what? We now know that our R is the 50 Ohm antenna (dummy load), but which Voltage do I use for E^2?

We need a little more information here. Remember, this is <u>not</u> a DC circuit. It is an AC circuit. Because the voltage is varying in time from zero to a positive peak, back to zero, and then to a negative peak, and then back to zero again, there are instantaneous amounts of voltage on that sine wave as it completes one full cycle; both positive and negative. Therefore, we have to pick the voltage that is most <u>effective</u> to do the work we need. As we learned with DC voltages, once we turn on the DC power supply or use a battery, the voltage will be whatever the supply delivers, and it will never go through a zero crossing. If it's twelve volts, it stays twelve volts until we turn it off, and then it drops to zero. It never goes negative like AC does.

In the late 1800's, a physicist named James Prescott Joule did experiments where he used DC voltages to see how much heat could be derived from a heating element (resistance). Very basically, he placed this element into water and then measured the temperature of the water. He did a *lot* more than that, but for our purposes here, we just need to know that he used DC batteries to heat that element. Later in history, as AC was coming into vogue, experiments were made to find out the amount of AC voltage that was needed to heat that same element to the same temperature as the DC voltage did. It turns out that it wasn't the peak voltage or the peak-to-peak voltage. It was something in between.

The suspense is killing me! So, what is it?? What voltage do we use? Well, I'll tell you. It's called the RMS Voltage (RMS means Root Mean Square. That's a topic for another *Ponder*). The voltage we use is 70.7% of the Peak Voltage. There you have it! There's the secret! Now we can use our equation. Oh, but wait!

Remember the question? That was sooo long ago. The question said, "…200 Volts peak-to-peak across a 50 Ohm dummy load connected to the transmitter output?" Oh, the humanity! Does it ever end?! Actually, this isn't that bad. The formula wants RMS voltage of the Peak Voltage. <u>So, we divide the peak-to-peak voltage in half:</u>

$$V_{PK} = \frac{V_{P-P}}{2} \qquad 100_{PK} = \frac{200\ V_{P-P}}{2}$$

Now, we know that the equation needs 70.7% of 100 V_{PK}. The voltage we need is 70.7 V_{RMS}. So, let's build our equation, and answer our question. Here's what it looks like:

$$PEP = \frac{E_{RMS}^{\ 2}}{R_L} \qquad \underline{\text{(Close enough to 100 W)}} \quad 99.97\ W = \frac{(0.707 \times 100\ V_{PK})^2}{50\ \Omega}$$

The official answer to the question is: ***100 Watts***.
There you have it, another *Ponder the Pool.* – 73 – Gary

Mountain Top Amateur Radio Association

The Amateur's Code
by Paul M. Segal, W9EEA (1928)

The Radio Amateur is:

CONSIDERATE never knowingly operating in such a way as to lessen the pleasure of others.

LOYAL offering loyalty, encouragement and support to other amateurs, local clubs and the American Radio Relay League, through which Amateur Radio in the United States is represented nationally and internationally.

PROGRESSIVE with knowledge abreast of science, a well built and efficient station, and operation beyond reproach.

FRIENDLY with slow and patient operation when requested, friendly advice and counsel to the beginner, kindly assistance, co-operation and consideration for the interests of others. These are the hallmarks of the amateur spirit.

BALANCED Radio is an avocation, never interfering with duties owed to family, job, school or community.

MTARA Shirts, Jackets, and More

We have many items available with our club logo.

The information for ordering is as follows:

- Name Tags—Harlan Technologies, Name Tags by Gene (715) 340-1299, www.hampubs.com

- Mouse Pads—Check with Jodi, WA6JL

- Polo Shirts—Port Authority K420P Dark Green, L420 Dark Green, K100LS Dark Green.

- Jackets—Forest Green or Black. Sizes Small to 6X

- Contact:

Hurt Ink

2651 Coleen Lane

San Bernardino, CA 92407

(909) 815-6852

hurtink815@gmail.com

www.hurtink.com