



YAVAPAI SIGNAL



The Yavapai Amateur Radio Club • Prescott, Arizona • DM-34 • Volume 25 – No. 6 • June 2010

From the President's Desk...



Hello Again:

YES!, it's that time again, Field Day/YARC Picnic is coming up on June 26th and 27th. The location is the Upper Ramada in Heritage Park, just above Willow Lake. From Willow Lake Road, turn into the Heritage Zoo, and continue past the Zoo to Heritage Park. This is the same location as last year. There will be Food, Fun, Field day activities, and friendly radios available for operators to try their hand at this Ham Radio event. This was a blast last year for every one who attended. There will be a local T-Hunt for anyone wishing to try his or her hand at T-Hunting. This will be a low power T-Hunt on the National t-hunt frequency of 146.565 MHz. Did I mention Great Food! Heritage Park is one of Prescott's best-kept little secrets, because it has so much to offer. The lake is within walking distance for fishing for those interested. This is the ideal location for a Picnic and/or our field day, bicycle riding, and walking trails. This is a convenient time to bring a friend, and have fun while introducing them to Amateur Radio and some of what we do throughout the year.

Both Lloyd WA6ZZJ and Patti are Field Day co-Chairpersons, and do an outstanding job of making this great event happen. Jim WB7UZV has offered to assist them in any way to help with this function. This event offers you an opportunity to see and operate some of the digital mode features and logging programs they use.

There will be a sign-up list at our next meeting for operators, members who would like to assist with this event, and those who plan to attend. Please bring a dish to share or some can food items for the Food Bank. This is a perfect opportunity to share in the Fun things involving amateur radio, in a picnic atmosphere. See you there...

Coming soon, ARCA/Williams Hamfest ARRL State Convention on July 16-18, 2010. This will be held in Williams, AZ at the Fair Grounds.

Respectfully, Pete K6VVR

YARC Officers for 2010

President

Pete Morrison, K6VVR
pm_service@earthlink.net

Vice President

Jim Ball, WB7UZV

Secretary

George Imburgia
ad7rl@netsecs.us

Treasurer

Mary Vince, AB7NK
ab7nk@ARRL.net

Board of Directors (includes Club Officers)

Terry Pemberton -- KB7TRE

Will Taylor -- AD7WW

Richard Bozeat -- KE7DTR

Walter Schumann -- KF6SPS

Newsletter Editor: Joe Oliver, AC6AA

joliver@cableone.net

Upcoming Events

- **June 26 - 27, 2010** - Field Day/ Club Picnic
- **July 16 -18, 2010** - ARCA/Williams Hamfest/ ARRL State Convention

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Welcome to the Yavapai Amateur Radio Club

The Yavapai Amateur Radio Club (YARC) is an ARRL affiliated Special Service Club. The club participates in many activities in the tri-city area by providing communications for local events, emergency communications, and promotion of the hobby throughout the community.

Membership in the YARC is open to any interested amateur or non-amateur alike. Dues are \$20.00/year (Full-time students \$15). The YARC meets at 7:00 p.m. local time on the first Thursday of every month in the Technology Room 404, at the Granite Mountain Middle School, 1800 Williamson Valley Road in Prescott. It is about ½ mile north of Iron Springs road, and all amateurs and non-amateurs as well are invited. Programs of interest are included as part of the meeting.

The weekly Net is held every Wednesday at 7:00 p.m. local time on 146.880- repeater. All amateurs are invited to participate, and visitors are always welcome.

The Yavapai County ARES/RACES Net is held on Monday nights approximately at 7:00 p.m. local time on the 145.290- repeater on Mingus Mountain. A PL of 127.3 is required.

Club Repeater

The YARC 146.880- repeater is located on the hill above Willow Creek road and requires a PL of 100.0 Hz. Our deepest gratitude to Bill Kafka, W2YAV for allowing us to acquire the original club repeater.

Minutes of May 6, 2010 Board Meeting



Meeting was called to order at 1820 hrs. by the President, K6VV R.

Also in attendance: KB7TRE, KF6SPS, KE7DTR, WB7UZV, AD7RL and AD7WW

Assigning members to greet visitors and new members discussed.

Avenues to disseminate information on club activities considered.

YARC Party venues considered. St. Michaels' cost has increased to \$25. January will be YARC's 20th anniversary.

YARC net script pre-amble modification to remove "Is there any emergency traffic?" discussed.

IRS has changed regulations regarding tax-exempt status, which may jeopardize our 501-C status. AD7RL to investigate.

On motion of WB7UZV, second by KB7TRE & no dissenting, meeting was adjourned at 1847 hrs.

Respectfully submitted,
George Imburgia, AD7RL
YARC Secretary

Minutes of May 6, 2010 General Meeting

Meeting was called to order at 1901 hrs. Following the Pledge of Allegiance; introductions were made.

Attendance: 63 of whom 57 signed in. Visitors included J. Nyman, KE7WYY.

New member Frank E Kennemur, KF7ING welcomed unanimously.

Wolfgang, DL3SEX visiting from Germany thanks to an Echolink contact, introduced and spoke briefly.

Minutes of the April meeting were approved as published, on motion of KB7TRE, second of WB7UZV, & no dissenting.

Treasurer: report offered by VP in AB7NKs absence: Beginning balance \$4533.21, Ending balance \$4497.84, and repeater fund balance of \$931.92. Report accepted as read with no dissenting.

COMMITTEE REPORTS:

Patches & Decals: WB7UZV reports patches and decals available.

ARES/RACES: WA6ZZJ reported 26 Amateurs manned 14 positions for the Whiskey Off-Road Mountain Bike Race, drawing 934 participants from 13 other states and Canada. The race may be extended to 3 days next year.

The 32nd Annual Whiskey Row Marathon was staffed by 24 Amateurs at 12 locations and 2 quads. This was the 12th consecutive year YARC provided communications for this event. One of the toughest marathons in the country due to elevation changes, the event drew 1,952 runners from around the country.

Starting in September, several events will require volunteers for communications:

Sept. 11, March of Dimes

Sept. 19, Skull Valley Loop Challenge

Sept. 19, Groom Creek Half-Marathon

Sept. 25, Tour-de-PV Half-Marathon

Oct. 1-2, Prescott Road Rally

Newsletter: AC6AA has been doing an excellent job with the Yavapai Signal.

Shirts: W6CCD has supply of club shirts available at \$19.00. w6ccd@arri.net

Badges: WB6ODR is accepting orders at \$6.75 for the custom engraved YARC badge. Has several ready for pick-up. lrsmith@cableone.net

Repeater: Committee reports all working well via WB6ODR.

WB6ODR was presented with a plaque in appreciation for his dedication in managing the club website for over 10 years. This presentation was followed by a thunderous round of applause.

Refreshments: K6UWV reports beverages, cake and cookies are available.

Elmer: WB7UZV advised elmering is going well.

School Clubs: WB7TRE reports the club at Camp Verde Middle School is being disbanded due to the retirement of the faculty advisor. Equipment is being donated to the GMMS club.

Nets: Young hams of Yavapai coordinator received suggestion to change preamble to notably invite all new hams. KI6AHH reports that the Young Hams net will remain on the 147.220 repeater to provide coverage to areas not reachable on the 146.880 repeater.

Slow Code 146.88- 100 Hz PI, Sunday about 7:30pm, WB7UZV has cw training materials to lend if you wish to use.

Club Net 146.88- 100 Hz PI Wed. 7 pm is accepting net control positions.

Fox-Hunt: Every Sunday after the monthly meeting, start time 1:00 pm, Arizona Credit Union parking lot adjacent to Walgreen's at Willow Creek and Gail Gardner intersection. Jeff,

WB7RFY won last month, and will be hiding the transmitter this month. Check in on the 146.880 repeater.

Food Bank: KB7TRE reports the Yavapai Food Bank is desperate. Please keep bringing in donations.

At last month's meeting, we collected \$420 in cash donations to help LCPL Michael Martinez and his family while he recovers from injuries sustained from an explosion in Afghanistan.

OLD BUSINESS

No old business.

NEW BUSINESS

WB7VGJ proposed changing the preamble for the club net to exclude "is there any emergency traffic?", since emergency traffic can and should break in at any time. Seconded by WB6ODR, approved unanimously.

A suggestion was made to have greeters at the doors during meetings to introduce new members and visitors. Doug and Bob volunteered.

Cost for the YARC Party at St. Michael's has gone up to \$25/plate. Moved, seconded and unanimously approved to continue at St. Michael's.

WB7TRE moved to adjourn, seconded by WA6ZZJ, approved 1936hrs.

Respectfully submitted,

George Imburgia, AD7RL

YARC Secretary

FIELD DAY 2010.....

Field Day, Saturday and Sunday, June 26th and 27th will be in the same location as last year, at the Upper Ramada in Heritage Park, and operated much the same way. Two stations are all we muster the manpower to operate, but if more interest is shown we may be able to expand. I believe the plan is to have the annual YARC picnic coincide with the Saturday operation. Field Day set up will be Saturday morning with operation beginning at noon and running until noon Sunday followed by tear down.

It would be nice to see more operators sign up to work a shift this year. As large as our club is getting there should be more interest. Through the night hours is when it is hardest to get operators. The bands do quiet down somewhat, but there is still activity. We are also looking to operate some digital modes as they score the same as CW contacts and can be run by most all involved.

We will have more information at the June YARC meeting as to digital operation, logging, etc..

Patti KD7VBG

Lloyd WA6ZZJ

Field Day co-Chairpersons

VE Testing

By Mary Vince, AB7NK

May 15, 2010, five very nervous applicants participated in a special test session. Results were one technician and four new generals.

Congratulations to all who attended!

There are no scheduled test dates for the summer at this time.

Yavapai Amateur Radio Club

May 2010 Treasurer's Summary

By Mary Vince, AB7NK

Income

4/17/2010	K7POF	Bob Sitterley	R	551	\$ 20.00
4/17/2010	W7POF	Linda Sitterley	F/R	---	---
4/23/2010	KE7DTR	Richard Bozeat	ARRL/R	001102	36.00
5/8/2010	K7KOL	Bob Kane	R	363	20.00
5/6/2010	AD7YR	Creighton Grotbeck	R	cash	20.00
5/6/2010	W4ZBP	Hank Riviere	R	cash	20.00
5/6/2010	KC7FPM	Arnold Watson	R	cash	20.00
5/6/2010	WB7UZV	Jim Ball	R	1191	30.00
5/6/2010	KF7ING	Frank Kennemur	N	342	20.00
5/6/2010	KD7MTJ	Al Crook	R	8270	20.00
5/6/2010	KF7ING	Frank Kennemur	Lg Patch	cash	3.00
5/6/2010			5 - Decals	cash	5.00
5/6/2010		Fifty-fifty			110.00
Total Income					\$ 324.00

Expenses

3/15/2010		Tigertech	Web Hosting	CC	83.40
4/21/2010	KE7DTR	ARRL	ARRL/R	1141	34.00
4/23/2010		Kwik Kopy	Az-Wac	CC	33.20
4/24/2010		Marsh, Seabury & Smith	Club Ins	1142	347.00
5/12/2010		Allegra	Newsletter	1143	32.87
5/12/2010		Corp Commission	Dues	CC	10.00
5/12/2010	K6UWV	David Passell	Refreshments	1144	10.18
5/6/2010	KE7DTR	Richard Bozeat	50/50	cash	<u>55.00</u>
Total Expense					\$ 605.65

Beginning Balance	\$ 4,497.84	April ending repeater balance	\$931.92
April Income	324.00	May repeater fund	<u>28.00</u>
Expenses	<u><605.65></u>	May repeater fund balance	\$959.92
General Fund Balance	\$ 4,216.19		
Decrease	\$ <281.65>		



June Program Speaker

Bud Semon, N7CW

The Topic will be "Contest Expedition to Sierra Leone"

Whiskey Row Marathon 2010

Photos courtesy of John Broughton, WB9VGJ & Ken Severance, WA6AQK
See WB9VGJ's website <http://tinyurl.com/24w4wrr> for additional photos.



Marathon Starts -- 207 Runners



Ken, WA6AQK and Walter, KF6SPS



John, WB9VGJ and Laura Winniford (Race Director)



Freedom Freddy



Lloyd, WA6ZZJ in Control Vehicle (MARC) with Laura



Marathon Overall Winner set record 2Hrs, 55min, 16sec



By Lloyd, WA6ZZJ

ARES/RACES.....

THE WHISKEY OFF ROAD.....



The first race started at 7:30 a.m. as 363 riders headed West on Goodwin Street to work their way to Copper Basin Road and eventually on to forest service roads and single track trails through the Prescott National Forest. This was the 50 mile event or in Whiskey Off Road vernacular "the 50 proof"... This would be followed by the 25 proof (25 mile) at 9:30 a.m. and the 15 proof (15 mile) at 10:15 a.m.



This year saw a total of 934 riders in the three race lengths which was up about 30% over last year and they expect it to grow more each year. There has been some discussion with the city to make this a three day event that could possibly draw international riders. This year, besides coming from all parts of Arizona, there were riders from 13 other states and Calgary, Alberta, Canada. They came from the East as far away as Michigan and Wisconsin to the North, besides Canada, from Minnesota, North Dakota, Idaho, Oregon and Washington. A little closer in they came from New Mexico, Texas, Colorado, Nevada, Utah and California. This event benefited the Yavapai Food Bank and Prescott Alternative Transportation.

There were a few minor personal injuries that happened this year, but more 'injuries' were suffered by some of the bicycles. They ranged from 'trashed' to 'being able to make it back on their own'.

This year there were 26 amateurs involved in the communications covering 14 different positions with all but net control being located out in the Prescott National Forest. A new location was added this year that was a hike or bike in position. Thanks to George, AD7RL, for taking this spot.

This year again our communications operation worked closely with the Southern Arizona Rescue Association (SARA), out of Tucson, that manned the medical aid stations on the route, with net control being located adjacent to their Goodwin Street location.

THE WHISKEY ROW MARATHON.....

The running of the 32nd annual Whiskey Row Marathon took place on Saturday, May 1st. This would be the 12th consecutive year for YARC to provide communications for this event. This is one of the toughest marathons in the country because of the elevation. Starting at 5,280 feet, the elevation increases to 7,000 feet over the first 7 miles, then down to 5,600 feet at the 13.1 mile turn around.

Along with the full marathon there were also a 1/2 Marathon, 10K Run/Walk and 2 mile Fun Run/Walk. Among the many local and some not so local runners in this year's event there was to be a Danish Air Force Captain and a female runner from Cape Town, South Africa.

From the Prescott YMCA: The 2010 Prescott YMCA Whiskey Row Marathon, Arizona's oldest and most scenic race, hosted 1958 participants, a 22% increase from last year. Over 150 volunteers arrived as early as 3:00 a.m. to help set up the course, handle race day registration, serve refreshments, man water stations and assist start/finish lines. We couldn't do it without all of you!

Proceeds from the race go into the scholarship fund at the Prescott YMCA to assist children and families in financial need.

This year's event was relatively incident free. There were a few muscle cramps and some fatigue with a few runners being transported back to the finish line, but nothing major.

For this event there were 24 amateurs active in providing the communications at 12 different locations and two mobile quad operators.

With these two events being on back to back weekends it was really great to see so many of our members turn out to support the YARC special event communications. We are beginning to see several new people volunteering to help and finding out how it can be fun to do these events and at the same time gain experience in emergency communications.

I want to extend a big THANK YOU to all who turned out to help. Events like this can not be supported without your assistance.

Now, the good news... It looks like there will be a break in event communications until September unless we have some new ones come along. The not so good news... September is going to be another busy month like last year with:

- Saturday, September 11, 2010 March of Dimes March for Babies
- Sunday, September 19, 2010 The Skull Valley Loop Challenge
- Sunday, September 19, 2010 The Groom Creek ½ Marathon, 10K and 2 mile
- Saturday, September 25, 2010 The Tour de Pee Vee ½ Marathon

Friday and Saturday, October 1st and 2nd will be the Prescott Road Rally.

It's not too early to mark these dates on your calendar..... ■

Test for Dementia

Below are four (4) questions and a bonus question. You have to answer them instantly. You can't take your time, answer all of them immediately. OK? **Answers are on the next page.** Don't peak!!!

Let's find out just how clever you really are....

Ready? GO!!!

First Question:

You are participating in a race. You overtake the second person. What position are you in?

Second Question:

If you overtake the last person, then you are...?

Third Question:

Very tricky arithmetic! Note: This must be done in your head only. **Do NOT use paper and pencil or a calculator. Try it.**

Take 1000 and add 40 to it. Now add another 1000. Now add 30. Add another 1000. Now add 20. Now add another 1000 ! Now add 10. What is the total?

Fourth Question:

Mary's father has five daughters: 1. Nana, 2. Nene, 3. Nini, 4. Nono. What is the name of the fifth daughter?

Okay, now the bonus round:

A mute person goes into a shop and wants to buy a toothbrush. By imitating the action of brushing his teeth he successfully expresses himself to the shopkeeper and the purchase is done. Next, a blind man comes into the shop who wants to buy a pair of sunglasses; how does HE indicate what he wants?

Arizona Worked All Counties

Have you checked your logs lately? If you've worked all fifteen Arizona counties, email az-wac@w7yrc.org for an application and rules.



Test for Dementia (continued)

Answer to First Question:

If you answered that you are first, then you are absolutely wrong! If you overtake the second person and you take his place, you are second!

Answer to Second Question:

If you answered that you are second to last, then you are wrong again. Tell me, how can you overtake the LAST Person?

You're not very good at this, are you?

Answer to Third Question:

Did you get 5000?

The correct answer is actually 4100.

If you don't believe it, check it with a calculator! Today is definitely not your day, is it? Maybe you'll get the last question right....

Answer to Fourth Question

Did you Answer Nunu?

NO! Of course it isn't.

Her name is Mary. Read the question again!

Bonus round answer

He just has to open his mouth and ask... It's really very simple.... Like you! ■

Frightened Taxi Driver

A passenger in a taxi leaned over to ask the driver a question and tapped him on the shoulder. The driver screamed, lost control of the cab, nearly hit a bus, drove up over the curb and stopped just inches from a large plate glass window.

For a few moments everything was silent in the cab and then the still shaking driver said "I'm sorry but you scared the daylights out of me."

The frightened passenger, apologized to the driver and said he didn't realize a mere tap on the shoulder could frighten him so much.

The driver replied, "No, no, I'm sorry, it's my fault. Today is my first day driving a cab. I've been driving a hearse for the last 35 years." ■

Need a Hand?



If you need assistance, we want to help you. If you are just starting out in ham radio, or simply have run across something that you could use a hand with... technical assistance or answers to questions about the Yavapai Amateur Radio Club, are available from knowledgeable club members.

Don't Hesitate to Ask for Help!!

Call: **Neil Vince**, KA7JAS at: (928) 775-2158

Jim Ball , WB7UZV (928) 445-2997

Will Taylor, AD7WW (928) 445-1717

Need Cards Checked for ARRL Operating Awards?



Jim Zimmerman, N6KZ can check your QSL cards for DXCC, WAS, VUCC, WAC, etc.

For information contact Jim at: (928) 713-0542.

Jim's QTH is at: 778 Grapevine Lane, Prescott, AZ 86305.

Membership Count:

1st Thurs. in April.....192*
Gain/Loss.....
1st Thurs. in May..(count unavailable)



* Includes 7, 3-Month Memberships

Plan to Join the ARRL or Renew Membership ?

Ask our Treasurer for a special ARRL Club Membership Application or download the appropriate application from the YARC Website. Complete the Application and return it to the Treasurer with the application fee.

There is no extra cost to you, and our club gets to retain a portion of the dues. ■

Essential₂ sticky

Reprinted from the "PCARA Update", December 2007 issue, courtesy of Malcolm Pritchard, NM9J

Here's another episode in the occasional series where we look at chemical products that are indispensable to the radio amateur. The American Chemistry Council's Essential₂ campaign aims to explain how the chemistry industry is "essential₂" our lives. In the latest phase of this campaign, two new TV advertisements were launched at the end of October 2007 to increase awareness of chemistry's contributions. See <http://www.essential2.com>.

Most shacks have a collection of sticky tape in the toolbox. Adhesive tapes are employed in all kinds of applications, from electrical insulation to watertight sealing, to holding components in place. Making sure those tapes stick correctly requires some crafty chemistry as this little history will show.

Removing the mask

The story of modern adhesive tape goes back to 1921 when 3M lab assistant Richard Drew was taking early "Wet or Dry" sandpaper samples to an autobody shop in St. Paul, MN. There he observed the problems associated with the two-tone car finishes of the time. Masking-off of areas at the border of the two colors was carried out with plaster tape or newspaper and home-made glue. Removing the mask after the paint had dried left residues or caused the fresh paint to peel off. Richard Drew thought he could improve this process.

After two years experimenting with gentler adhesives based on linseed oil, resins, chicle and glycerine, Richard Drew came up with a pressure-sensitive formulation, which he coated onto a 2 inch wide strip of crepe paper. The adhesive only covered the edges of the tape, and when it fell off the vehicle during its first test, the angry body shop painter said to Drew, "Take



3M Masking Tape



Scotch Masking Tape

this tape back to those Scotch bosses of yours and tell them to put more adhesive on it!" By "Scotch" the painter meant "mean and stingy", rather than any drink or any person originating from GM-land. But the "Scotch" name stuck and "3M Masking Tape" went on to become "Scotch[®] Masking Tape". (By the

way, the company I work for manufactures car paint for body shops and runs training courses for those angry painters. I've paid a visit to their spray-painting school in Georgia.)

The clear winner

Richard Drew's next invention made the 3M company famous. An insulation firm was looking for a way to seal insulation batts for use in refrigerated railroad cars, so Drew tried coating Cellophane (regenerated cellulose film) with adhesive for use as a sealant to keep the damp out. He applied a nearly invisible adhesive layer made from rubber, oils and resins, to a coated cellophane backing. The insulating application did not take off, but Drew was next called on to find a way of sealing Du Pont Cellophane, which was becoming popular with food distributors as moisture-proof packaging. Drew and his colleagues spent more than a year developing his cellophane tape further, but there were problems. The cellulose tape backing curled near heat, split when it was machine-coated and did not accept adhesive evenly. The production problems were solved one by one, and the team designed new coating machinery that applied a primer coat to the film backing, so the adhesive could be evenly spread. They also developed a new, almost clear adhesive.



3M tape wizard
Richard Drew.

Because the new product was waterproof and withstood high temperatures, the tape soon found other uses. Introduced in 1930, at the start of the Great Depression, Scotch[®] Brand Cellophane Tape was used by thrifty people for sealing packages, mending torn pages in books and documents, repairing bank notes, fixing ceiling plaster and preserving cracked turkey eggs. 3M celebrated the 75th anniversary of Scotch transparent tape in 2005. (<http://www.3m.com/brands/scotch/anniversary/index.html>)



In the UK, transparent tape is better known as "Sellotape", a brand that originated in 1937 when Colin Kininmonth and George Gray coated Cellophane film with a natural rubber resin.

Shortages of rubber during World War II led 3M away from rubber-based adhesives for their tapes toward synthetic acrylate adhesives, which do not yellow over time, and maintain better clarity. Acrylic pressure sensitive adhesives are made with several types of

acrylic monomers that are polymerized to high molecular weight polymers. The two main acrylates used in modern pressure sensitive adhesives are 2-ethylhexyl acrylate and iso-octyl acrylate. Their adhesive properties can be modified by compounding with tackifiers, such as terpene resins and other resinous components to improve adhesion.

Further improvements to 3M's tape were made by changing the tape backing from cellophane to cellulose acetate film, avoiding the crinkling and yellowing that cellophane suffers as it ages. The starting material for cellulose acetate film is wood pulp or cotton seeds, which are broken down into cellulose fibers with mechanical crushing and chemicals such as soda. The raw cellulose fibers are then treated with acetic acid and acetic anhydride to create "triacetate", followed by partial hydrolysis to produce the basic form of cellulose acetate. After removing moisture, the cellulose acetate is mixed with a plasticizing material, and the resulting cellulose acetate plastic is pelletized. The pellets are melted and spread over a conveyor belt to form thin plastic sheets. The resulting film is then wound onto rolls thousands of yards long to await application of the adhesive.

Today's acetate-based Scotch Magic™ Tape disappears when applied to paper, stays invisible and can be written on. The adhesive remains on the backing and does not soak into the paper, as with earlier tapes.

Sixty years of sticky

Until 1947, the only tape available to electricians was what we now call "friction tape". This was a cotton fabric



Scotch Magic Tape

tape impregnated with tar, using a vulcanized rubber adhesive. I can remember having to use this horrible black-colored tape as a youngster - it was messy, lacked strength and it tended to rot or dry out over time. It had to be applied over rubber tape to insulate a conductor, and under certain conditions, the rubber adhesive - vulcanized with sulfur - caused corrosion of the copper.

By 1946, with the baby boom underway, novel polymeric materials from World War II were becoming available, including **polyvinyl chloride**. Early efforts to combine this vinyl polymer with an adhesive to make electrical tape were not successful, but 3M per-

sisted and in January 1946, three 3M scientists applied for a patent for a vinyl electrical tape with a plasticizer system and non sulfur-based rubber adhesive. Their choice of polyvinyl chloride was a good one because plasticized PVC is highly flexible, it can be stretched, and it is a good electrical insulator. (Nowadays, most electrical wire in homes and shacks is insulated with PVC for similar reasons.) Esther Eastwold was the 3M team member who found a plasticizer that would stay in the PVC backing and not migrate into the tape's adhesive coat.

3M is currently looking back to the 1940s to recall the company's invention of vinyl electrical tape. Scotch electrical tape is now 60 years old and is the only vinyl electrical tape still made in the United States. The tape that has since become known as Scotch® Super 33 +™ Vinyl Electrical Tape is the 17th version of this best-selling vinyl tape. Increased adhesion allows the tape to remain sticky, adhere smoothly in low temperatures and not ooze or melt in high temperatures. The improved backing provides greater flexibility in cold weather and easier handling year-round. (See: <http://www.omnexus4adhesives.com/services/news.aspx?id=737>).

The first commercially-available vinyl tape was actually yellow. Later versions were white, but that color proved unstable in ultra-violet light. The popular black version was introduced because electricians were already familiar with black tape, and it would withstand ultraviolet radiation better. Nowadays you can purchase vinyl tape in a variety of bright colors, equally suitable for cables, marking tent poles or identifying aluminum antenna elements.



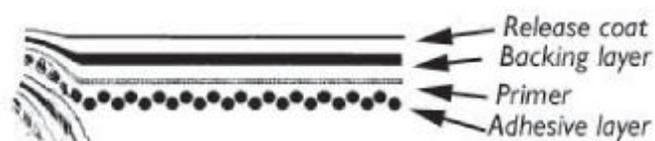
Scotch Super 33+ vinyl electrical

To use vinyl electrical tape reliably, it should be stretched and applied tightly around the joint without leaving gaps between tape wraps. Don't stretch the last wrap of the tape so it won't peel up or flag.

Attractive layers

Modern pressure-sensitive adhesive tapes actually have four layers. We'll start with the backing layer, which might be made from crepe paper, polyethylene or polypropylene film, cloth, metal foil or plasticized PVC.

A release-coat is applied to the backing layer on



Modern adhesive tape consists of four layers.

the side opposite the adhesive, to allow the next layer of tape to unwind from the roll without sticking. This release coating is often a polyvinyl carbamate. The other side of the backing layer has a primer or keying coat applied to insure good adhesion to the fourth layer, which is the actual adhesive. Formulation of the adhesive layer requires a combination of ingredients to obtain the correct combination of pressure-sensitive stickiness, removability, clarity and water-proof characteristics.

Two-sided sticky

A different type of 3M tape originated from the work of Ted Buchholtz, who had been recruited into 3M's somewhat eccentric "ProFab" lab. Buchholtz began experimenting with ways to make urethane foam, adding colors and exploring ways the foam might be used. His first 3M patent was the chair rail, which used foam to protect walls from chairs bumping into them. Continuing to explore ways to use the foam, Buchholtz put adhesive on both sides of it and called it double-coated foam tape.

This discovery was the forerunner to 3M's Scotch Mounting Tape, which can be used in the radio shack for keeping electronic components in place against a chassis or circuit board, for fastening microphone clips to a shelf or dashboard as well as for its intended purpose of mounting signs, maps and even QSL cards on the wall, without screws or nails.

All wrapped up in itself

Another type of tape that deviates from the usual formula is "self-amalgamating" tape. This product binds to itself when wrapped around an electrical joint, forming a uniform, waterproof protection over odd-shaped components such as coaxial connectors, ground rod ends and other



Scotch Mounting Tape

items useful to radio amateurs. Some tapes such as Scotch 2228 Rubber Mastic Tape are wound with a paper liner layer to prevent the compound fusing with itself before it has been removed from the roll. Scotch 2228 tape consists of an Ethylene Propylene Rubber (EPR) backing, coated with a strong, temperature-stable mastic adhesive. Other types such as Scotch 130C Linerless Rubber Splicing Tape forsake the paper liner, by having a tacky side and a non-tacky side to the EPR base. In use, these tapes are applied with the tacky side up, stretched to a minimum of three quarters of their original width and half-lapped to produce a uniform build-up around the joint or assembly. The joint should then be further protected by wrapping it with two half-lapped layers of vinyl electrical tape.



Scotch 2228 Rubber Mastic Tape

So, next time you fish some adhesive tape out of your toolbox, think of all the chemistry — and the clever chemists — that contributed to its manufacture and its ease of use. ■

- NM9J

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WOULD YOU MIND RUNNING UPSTAIRS AND SEE IF I'M BOTHERING YOUR MOTHER'S TV?

Weekly Breakfasts



Tues. Morning Breakfast:

7:00 a.m. at
Back Burner Cafe
 8400 E. Long Mesa Drive
 & N. Robert Road
Informal – all are invited.

Wed. Morning Breakfasts:

7:00 a.m. at
Iron Horse Restaurant
 (Hwy 89 in Chino Valley)
 (N 34°43'56.5" W112°27'15.4")*
informal – all are invited

8:00 a.m.
Masonic Lodge
 (1280 Willow Creek Road,
 2nd Floor; above Bank of America)
informal – all are invited

* Location data (per WGS84) provided
 by Fred Zimmermann, N7PJJ

Area Repeaters

Fre- quency	PL	Location	Owner/Club	Auto- Patch	Rem. BaseOr Linked	Vo IP	Notes:
52.560-	100.0	Mt. Union	N7NGM			IRLP	Node 3301
145.290-	127.3	Mingus Mtn.	ARES/RACES				
146.780-	91.5	Williams Mtn.	BWARC			IRLP	
146.880-	100.0	Prescott	YARC				
146.980-	162.2	Flagstaff	CARC				
147.000+	162.2	Mingus Mtn	MMRG				
147.140+	162.2	Flagstaff/-Mt. Elden	ARA		Linked to Mt. Ord -		Mt. Ord=147.36
147.220+	162.2	Mingus Mtn	VVARA				
147.260+	103.5	Mt. Union	ARES/RACES				
224.080-	156.7	Mt. Union	WA7JC				
442.150+	100.0	Mingus Mtn	W1OQ/Northlink				
442.350+	100.0	Glassford Hill	N7KPU			IRLP	
448.475-	100.0	Flagstaff-Elden	ARA	Yes			
448.875-	100.0	Flagstaff-Elden	Northlink		Linked		
449.175-	100.0	Towers Mountain	Northlink		Linked		
449.675-	88.50	Prescott Airport	WB7BYV		Linked to P Mtn.		P mtn=927.3875
449.725	110.9	Mingus Mtn	WA7JC				
927.0875-	151.4	Mingus Mtn	WB7BYV				
927.3875-	151.4	Prescott	WB7BYV	Yes	Yes	Echo	Be Nice

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