Dragnet

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Official Journal of the St. George Amateur Radio Society

PO Box 530, Engadine NSW 2233

Note: The views expressed in this publication are those of the editor and anyone else he has dragooned into writing, and not necessarily those of the Executive of the Society. Where ideas come from other sources, the editor has tried to give due credit and obtain clearance.

Thanks to Wayne, WB5WSV for this view of a radio opertor's position in a B-26B – how many items can you identify?

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Dragnet material

Send Dragnet material to the Editor via:	**email:** brianclarke01@optusnet.com.au (preferred at the moment)
	snail mail to the editor's home address which is OK in the Call Book.

Visitors are always welcome at our meetings

Meetings are currently held on the first Wednesday of the month at 1st Kyle Bay Scout Hall, Donnelly Park, Kyle Parade, Connells Point, commencing at 7:30 pm.

St George ARS Nets

The Society conducts regular nets on the 2 metre and 80 metre bands. Fortunately, those participating are very interesting, with a few good stalwarts being there on most occasions. Encourage your non-club member friends to join in – there are several such who join us regularly. So, come on, switch on the rig and spend a few minutes on either of the following:

2 metres

146.800 MHz (VK2RLE repeater 6800) every Thursday evening at 2000 hours local time followed by a SSTV segment commencing at 2030 hours – we hope to have this repeater back to strength soon.

80 metres

3567 kHz +/-QRM every Sunday evening at 2030 hours local time. Why 3567? – ask a club member!

What we would really appreciate is some more dedicated help and donations of time, rather than complaints from the vocal non-helpers. For instance, over the last 6 months there have been two licence training and assessment weekends, a three-day centenary expo, and assistance with JOTA. And the same three or four seem to be doing all the organising and carrying out the major roles. C'mon people – lend a hand!

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Hymns ancient and modern

Club activities

For breaking news on club activities, go to the club's webpage and listen to the WIA broadcasts each week.

The St George website

Where? Go to http://www.sgars.org

Many thanks to the website committee, we now have a really good-looking website that is up-to-date and works well. Let the site manager know if you have something to add – or send a 'Cheers and 73'.

Equally, if you have something you can't bear to throw away and would prefer to see it go to a radio amateur, contact the site manager to advertise it on the website – vk2gx@sgars.org.

All back issues of Dragnet for 2007 to 2010 are available there now. Go to Downloads/Dragnet and select the year and issue you want to read. In the near future, we plan that Dragnet will only be available via the website. We may still print a few copies for those of you who persevere in using Senatore Guglielmo Marconi's spark and coherer devices for your wireless communications. Dried hemp – string for your two tin cans - is getting so difficult to find these days with the police clamping down on growing your own, that some of our older members have been rumoured to use Heliographs and Semaphore flag waving.

Keeping our ancient voices singing

Many of us have radio equipment that uses switches, potentiometers, variable capacitors, connectors, and for a diminishing few of us, valves. What do all these components have in common? Moveable contacts and often between dissimilar metals. Further, most of us keep our radio equipment where we can access it easily – this means it gets exposed to our changing weather – temperature, humidity, and, in some cases, salt spray and dust. These are all wonderful at generating corrosion. As we all know, metal oxides, apart from silver oxide, are very good insulators – which is the exact opposite of what we want as conducting paths in our radios. Should we prevent the oxides from forming or remove them when they appear? Discussions about this vexed question have raged for decades.

Here are some strands:

If you think the spelling is strange in places, I have left the original words as they arrived; some of it is informed by Noah Webster – some is not … *Ed*]

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Refurbishing our beloved gear

Drilling out knob set-screws

I've got an aluminium knob on an old rcvr with a completely rounded out Allen head setscrew. I've attempted to drill out the set screw using high speed steel, cobalt and tungsten drill bits, all to no avail. Seems this setscrew is hardened steel, harder than any drill bit I can find.
Any ideas on drilling this out, guys?
73 Lee WB6SSW

Go to a good hardware store and get a cupla small size left handed drills. They might bite enough to turn the screw out, inside of tightening it like normal drills. The hole probably isn't deep enough for using an EZ-out, which is left handed.
73, Al, W8UT

If you can get a carbide drill of the right diam. and run it fast enough it will drill any hardened steel. You might have to find a machine tool supplier. If the screw is really hardened tool steel although it would be unusual, an easyout won't be able to bite into it and you won't be able to peel the remaining threads clean with a tap as it will just break the tap. You would have to drill and tap another hole.
Bob W1GTH

Harbor Freight sells some kits/sets of small diamond drills and burrs that are excellent for removing hard screws etc.
Lloyd KK7IZ kk7iz@cox.net

Can you remember how many times those small set screws with the internal hex have aggravated you on your Tektronix and other equipment? Recently I was trying to take a 576 curve tracer apart without ruining anything. Someone else had already made a mess of the screws, including some failed "drilling" attempts on two screws.

In the course of getting everything apart, I thought about how awful the ordinary hex wrenches were with their rounded tips on the somewhat soft steel hex, and what a mess it made of the screws when they spun in the hex hole of the screw.
I thought... I need to find some high quality hex wrenches, but where could I get them? Then I remembered some people I used to work with that were into radio control scale model cars that were of very high quality and mostly held together with internal hex set screws. These people worked on their cars a lot, and surely they didn't put up with those normal junk hex wrenches. So I found a good radio control model car shop within an hour's driving distance and went to see what they had to sell.
They had several brands of higher quality hex wrenches, all of which were made like a screw driver with the handle in line with the hex tip. The ones I liked the best were made by the "Losi" radio control model company and this store sold them in individual sizes as well as sets of four (?).
The set screws that are most common and give me the most grief use .050" and 1/16 (.0625") hex wrenches, so I bought one each of them. Replacement bits are sold for these tools, and these bits are ground from solid heat treated tool steel and have very sharp corners on the hex. These hex wrenches work great, and it came out that the radio control car companies sell high quality set screws too. Some of these set screws are available in a hardened condition, and all of this stuff is available on eBay. I bought some hardened Losi brand 4-40 screws on eBay and they arrived today, very nice! When you tighten any of the new screws with a better wrench, they feel very positive with no hint of it "stripping" the hex.
These hex wrenches were a bit pricey but in hindsight worth every penny.

Do any of you have any knowledge of the radio control model world? I've lost contact with those people I used to work with and I don't know anyone else to ask. Perhaps there are better hex tools and fasteners available?
Tom Jobe...
PS I was hoping that the smaller size screws were available as "Torx" spline drive screws, but it does not look like anyone makes them. These high quality hex tools are also available in metric sizes.

Bondhus and Wiha are quality hex key brands available worldwide. A lot of damage happens (even in my US lab) from folks trying to use the nearest metric size rather than the intended .050 or 1/16 inch.
You can get good setscrews in the US from McMaster-Carr, Grainger or MSC for example. Don't be tempted to change to stainless (say, because originals rusted). It's intrinsically softer. Stick with hardened black steel, eg,
http://www.mcmaster.com/#socket-set-screws/=8lc0q1
There are some special places where what is actually called for is a "spline" key, a tiny forerunner of Torx. These can be harder to find, in the old days they were supplied with counting pot dials (which is where you usually find you need one, say on the delay time 10-turn).
Mike

Filing it is not a good idea; you'll need a new file. Instead grind it, keeping it cool with water or the temper is gone.
One more reason why I don't like ball ended Allen screwdrivers, apart from the built in failure point, is that you can't shorten them to get a new tip. I feel there should be no need for ball ended screwdrivers since any engineer who designs a screw without straight access should have the screwdriver pushed up his you-know-what, and not one with a ball end either...
Generally I am not a big fan of Allen screws; cross section of driver is too thin compared to thread and angle of force too high.
Stefan Trethan

I have a long Xcelite 1/16" that I have been using for at least 5 years and it is still better than some new junk I have bought since. It is long enough that I can file away the bad tip if it ever fails. I have no handle for the 1/16" tool and it is very good at hiding. This new kit (PS89) may be easier to find.
Jerry Massengale <jmassen418@yahoo.com

Why that's one of them thar new fangled compact versions marketed under Xcelite PS-89 or PS-89V. Maybe it's supposed to be the "green" version of the real tool.
The original long reach version, Xcelite 99PS40, is still available. Like with many things, size does make a difference especially when it's something like a flexible coupling buried so deep it can hardly be seen.
Make up your own horror story and ask yourself which one you want, the short or the long version.
Rolynn Prechtl > K7DFW

I doubt "green" has anything to do with it. Ideally you should have both long and short as they have different uses. The long is good for getting into deep places like you mentioned, but the short is less springy so you can apply more torque and thus better chance of loosening tight screws.
Peter Gottlieb <hpnpilot@verizon.net

When working at Tek, I was introduced to the Air-Tuf brand of 1/4" hex bits. For six years, I used the same #1 and #2 Pozidriv bits with no wear at all. Same with the Phillips bits, which are predisposed to wear that the Pozidriv versions aren't.
I also have a set of Xcelite Allens and a set of Xcelite Bristol wrenches. Those of you who have worked on some Philco radios made in the 1940s or the Collins R-390 receiver know about the Bristol drive, which resembles teeny, tiny power take-off on tractors. Sometimes, you can get a Bristol to jam into a worn Allen and get it

to turn.
Another trick is to get a next-size-larger Allen wrench and use a file or grinder to gently taper the faces to a "variable" size that can be jammed into a set screw as you turn.
Don't forget that you may find a Torx size that will nestle tighter into a worn Allen recess.
Dean

Potting and de-potting components

Coil Dope is good for coating coil winds as it will not affect the Q of the coil to any great amount. Glyptal is used mostly to keep parts from un-tightening and to prevent oxidation. I also use Conformal coating to prevent moisture build up on PCB. Do a Google search for "GC Products ". The last time I got some was from Ocean State Electronics.
Jeff N2LXM

What is the primary difference(s) between Glyptal, and coil dope? Coil dope is polystyrene plastic dissolved in methyl ethyl ketone. When the solvent evaporates, you basically have a coating of polystyrene plastic. Glyptal is an alkyd-resin based enamel paint (aka oil paint). When the solvent evaporates, you have a coating of (pigmented) alkyd resin, which then crosslinks under exposure to oxygen into a tough coating.
And where can one get Glyptal? GC Electronics part number 10-9002 "Red Insulating Varnish". You can order it direct from GC Electronics' web-site, or from most distributors who stock GC Electronics chemicals. It looks to be identical to Glyptal Inc. #1201 GLYPTAL Red Enamel paint.
Steve Byan stevebyan@comcast.net

One of the US companies we used to rep years back, made Travelling Wave Tube Amps. The HV PSUs were all potted with clear silicone resin, made by "Dow Corning". This was a two part material you mixed up when needed (odourless too) and when cured formed a water clear hard rubbery material as a result.
It was noticed that the un-cured material was conductive (lossy) even when mixed, as one tech found out trying to be impatient to get something out the door. We've also found the one part RTV stuff too, to be semi-conductive when un-cured, even the non-corrosive version.
Being a two part compound, it cured evenly, regardless of how deep the potting was needed to be.
The other advantage of the water clear "Dow Corning" material was that you could see what you were doing when digging out a failed HV module. We also use to add LED's in some of the repairs, to confirm some things were working, such as filament and grid supplies. Very pretty!
The company we rep now, uses a dark red material for HV potting, that also set's like concrete, so sadly, if a module fails, it's a "Lobster" or door stop.
I'm sure you could find such water clear two part silicone potting compound if you looked about, especially over there in the US.
Dave Baxter

Epoxy softens in dichloromethane (a.k.a. methylene chloride) which is nasty but available (sold for paint stripping). A specific mixture with methanol and distilled water is supposed to have magical powers on epoxy (US patent #4,278,557).
Other mixtures include formic or acetic acid. This deforms the softened polymer chains encouraging them to swell and crumble. I think one such product is called Dynasolve, see http://www.dynaloy.com/Products/potting_removers.html
However if you're looking to save the HV components inside, and they also have epoxy bodies, the cure may be as bad as the disease if you don't catch it in time.
Mike

Please do not try methylene chloride, your liver will thank you for not using it!
Next..... try to put the epoxy parts in a boiling ethylene alcohol or even isopropylene. Take care.... the vapor is burning very "happy" but after a while of being drowned in alcohol the epoxy is weakening and swelling. It then behaves like a hard cheese.
You could possibly take it away like you can do with cot glue when it is below freezing point. This procedure takes some time, but it is more save for you health!!!
Herbert / Humberto CT2IJD

I would not recommend trying to depot it.
I have followed the thread and there have been several suggestions for methods to deteriorate the epoxy so you can remove it. One big problem with this idea – many of the components in the module have epoxy cases which would be attacked as well! Certainly all of the HV diodes in the multiplier for one; the capacitors may have either epoxy cases or seals, or use another resin which is attacked by the material you use to remove the potting.
Even if you did remove the potting without damaging the working components, you would need to clean the circuit, and then replace the potting using a vacuum chamber to remove the moisture.
The only reason I could see for wanting to remove the potting of the existing multiplier is to trace the circuit out. In any case, you are going to need to find an exact replacement, of something close that can be cobbled in to fit.
Steve

He gave a tip for safe softening of epoxy though, to get the remains off to a clean looking state, he used amyl acetate (banana-oil).

That seems worth trying. Maybe along with freeze spray?
John Griessen

There will be more next time on removing conformal coatings, restoring original paint finishes, the perennial solder question, fixing scope probe leads and battery contact corrosion -*Ed.*

Useful urls

This list is a miscellany pasted and edited in date-received order. My collection runs to 900 items [and growing] – I will drip feed them to you over the next few issues. I have separated out the test and measurement material. Some urls wrap over several lines – if you can't get them to work directly from your electronic copy of this mag, copy the *whole* url to paste into your browser.

As anyone with sufficient time can find and use urls, they are not copyrightable – so I have left out the sources – mostly - *Ed*

The complete NRI course on the web.
http://www.retrotronicsource.com/cls/NRI/NRIHome.html

Here is the first issue of Amateur Radio Action (ARA), Volume 1 Issue 1 (April 1978) 74 pages. The way it was 32+ Years ago...
http://www.qrz.net.au/ARA/

Google Earth's latest Earth 4.3 Video Go here to watch video now

For those of you who have a hankering to hear and see a Model 15 Teletype in operation, then point your browser to:
http://jproc.ca/rrp/teletype15_recording3_jbrewer.mpg

The best way to find a particular manual on my (Didier KO4BB) web site is to enter the numerical part of the model number in the search box. Only add more characters if the search result exceeds 50 hits (it will only return the first 50). Here is one such link: If you need a USB to GPIB interface, try
http://www.ko4bb.com/Test_Equipment/GPIB.php

This link talks about a moon bounce event.
http://www.wired.com/wiredscience/2009/06/moonbounce

Here's a DoD video of setting up a PRC-77, including placing it on the bottom shelf of an Alice frame (about halfway through).
http://www.wonderhowto.com/how-to/video/how-to-use-an-prc-77-for-radio-communication-195448/

(There are some interesting errors in that movie. It's just an annoyance when the narrator calls the base of the 10ft antenna the "support antenna" instead of the "antenna support", but when he refers to the MHz knob setting as the "low band" and the kHz knob setting as the "high band", that's just wrong.)

Heres a handy tip to get around Flea-Bay's newest search string stupidity:
Just append the item number to this string:
http://cgi.ebay.com/_W0QQcmdZViewItemQQitem

While this won't replace a good quality receiver and antenna, it does nonetheless, allow you to monitor the radio bands anywhere you can set up a PC with a connection to high speed Internet.
http://websdr.ewi.utwente.nl:8901/

Cool (U-boat radio room)
http://www.youtube.com/watch?v=H6rTkcGVNGg&feature=related

A humorous look at the loss of analog TV.
http://jproc.ca/test/digitalconversion.wmv

The film "The Dish" starring Sam Neill was all about Parks Obsv. during the Apollo mission. Quite entertaining.
http://www.imdb.com/title/tt0205873/

If you want to view the restored Apollo 11 landing video, it's at:
http://www.nasa.gov/multimedia/hd/apollo11.html

At about page 32 there is a detailed analysis of the early SMT integrated circuits that were used in the Apollo and LEM computer systems. Pretty advanced stuff for the day.
http://www.nxtbook.com/nxtbooks/cmp/eetimes_apollo_20090720/index.php#/1/OnePage

This little device (mobile phone) has more computing power than the computers onboard the mission to the moon 40 years ago.
http://en.wikipedia.org/wiki/Apollo_Guidance_Computer
The Apollo flight computer was the first to use integrated circuits (ICs).

"Index to Surplus" written by Roy Pafenberg, is an annotated bibliography of surplus conversion articles that appeared in CQ, 73, QST, Radio-Electronics and Electronics-World magazines from 1945 thru 1961.
http://srohrer.com/Radio/Manuals/index-to-surplus.pdf

Here's a reference on life of capacitors that you may find useful:
http://www.nemcocaps.com/pdflibrary.html
Under "Other Info" select "Performance Info." About 2/3 of the way into the PDF file is a chart titled "Percent Rated Voltage U/UR (%)"showing the affect of the ratio of applied to rated voltage on reliability. This chart appears in many documents and is a standard.

After much work Brooke Clarke has converted the training manual "Cryptographic Collection Equipments, Naval Education & Training Command, NAVEDTRA 10251" to a pdf and it's available on CD-ROM. See:
http://www.prc68.com/P/NAVEDTRA10251.html
The hard copy has very poor navigation features, i.e. the TOC was only 9 items and there was no list of figures and no list of tables. I have added an enhanced TOC that's indented two levels deep as well as the LOI and LOT so it's very easy to use on a computer.

Thanks to Charlie, N9SOR, I, Bill, VE3NH, have received 28 additional pages of modifications made by Hammarlund to later production runs of the HX-50 to turn it into the "A" model. All of the files will be readily accessible on my web page. These files include the ZBZ mod, upgraded VOX and speech amp, various bias and keying mods, idling current mod, HV power supply mod and so on. My web page is www.isp.ca/ve3nh Select BOATANCHORS and then the link to the HX-50 near the bottom of the page.

You are most likely aware of Dr Alex http://www.nd2x.net/ur4ll.html as a source of radio parts / tubes and many other bits.

Canadian Avenger anti-submarine aircraft is featured with emphasis on the electronics suite. It had a starring role in the golden era of Canadian naval aviation.
http://jproc.ca/rrp/rrp3/avenger.html

The Fairey Firefly was the antisubmarine aircraft which opened the door to naval aviation for the Royal Canadian Navy starting in 1946. Now available, is the fourth instalment in my series on past and present Canadian anti-submarine aircraft. The Fairey Firefly in Canadian service is the featured aircraft with emphasis on the electronics suite.
http://jproc.ca/rrp/rrp3/firefly.html

Awesome! http://www.williamson-labs.com/555-circuits.htm

SE-6861 / Mod 12 manual in pdf at link
http://www.radioamateur.eu/schemi/Surplus_NATO/z_Surplus_NATO.php

These two film clips totalling 26 minutes viewing time, describe how the DEW line was built in only 32 months.
http://www.archive.org/details/dew_line_story_1
http://www.archive.org/details/dew_line_story_2

You want MIT Rad Labs books?
http://www.amazon.com/M-I-T-Radiation-Laboratory-Volumes-Cd-Roms/dp/1580530788

Here is the *two page scan* of the regenerative IF feature, as was gleaned from the November 1940 issue of the old "*RADIO*" magazine. I hope you guys like it Remember, most any OT receiver can be easily adapted to incorporate this change, too. I plan on doing just that to my HB receiver here, the details of which may be seen at:
http://www.superhets.info/page9.html

If you are into R1155 sets, this book covers dismantling, cleaning and refurbishment of chassis and components and rebuilding the set. Clear close-up photos and diagrams allow one to completely replace all the original rubber covered wiring even if the original wiring has be hacked or removed. 158 pages of great information. Go to http://www.r1155.blogspot.com/ for more information, pricing and how to order. When ordering, please tell Peter where you heard about the book, ie, Ausmilsigs.

The **WA1ZMS** beacon on 144.285000 MHz is now running a 500 W transmitter giving 7 kW ERP. The beacon is GPS-locked and the antenna comprises two 5-element stacked Yagis beaming at 60 degrees from IARU locator FM07fm. The CW message is "de WA1ZMS/B FM07fm at 4200 ft AMSL"
http://www.directivesystems.com/WA1ZMS.htm

I got my monthly email sales blurb from Marlin P. Jones Assoc (www.mpja.com http://www.mpja.com/), which almost always has interesting and inexpensive electronics components. This month's specials strike me as nearly irresistible for boatanchor collectors with a home-brewing interest.

I ran across http://www.radiomuseum.org
You only see anything useful if you are a member. it costs $25 to join

Nostalgia Air has a huge database on US sets and some Euros. www.nostalgia.com and www.nostalgiaair.org

And BAMA is strong on BA's of course.

Footage of an undersea cable being laid in the SF Bay area
http://www.liveleak.com/view?i=258_1252271986

This company can supply almost anything you need for your amateur projects.
http://www.minikits.com.au/

Readers of these pages may remember that I (Richard Dillman) did a special episode of "Incredible Radio Tales" KWMR last week. For those who were unable to catch it live I've posted it on line for downloading. It's a big file so it will take some time to download but it's available at: http://www.radiomarine.org/IRT/
The show deals with everything from the strange sounds you can hear on radio to the KPH operator who was torpedoed twice during WWII.

You have a CU-2194? Some info at:
http://www.prc68.com/I/CU2194.html

For documentation and info, try WA2CWA, Pete manualman@juno.com and NI4Q, Al Bernard ni4q@juno.com Both are terrific people, long-time Hams, offer original and reproduction manuals, reasonable prices, prompt service and quality+

Three books about RAAF WWII Radar , namely 'Echoes across the Pacific', 'Radar Yarns' and 'More Radar Yarns', which are all now out of print, have apparently been made available for download by the authors.
http://www.radarreturns.net.au/archive/EchoesRRWS.pdf
http://www.radarreturns.net.au/archive/Radar%20YarnsRRWS.pdf
http://www.radarreturns.net.au/archive/More%20Radar%20YarnsRRWS.pdf
From the AWM, here is a scan of the original report 'An Account of the Development and Use of Radar in the Royal Australian Air Force' by Wing Commander A.G. Pither dated Dec 1946.
http://www.radarreturns.net.au/archive/AWM54%20810-2-2.pdf
It's big at about 38 Mb

Surplus_radio_conversion_manual_vols 1, 2 and 3 can be found at:
http://www.mines.uidaho.edu/~glowbugs/PDF%20files/Surplus/Surplus_radio_conversion_manual_vol1.pdf
http://www.mines.uidaho.edu/~glowbugs/PDF%20files/Surplus/Surplus_radio_conversion_manual_vol2.pdf
http://www.mines.uidaho.edu/~glowbugs/PDF%20files/Surplus/Surplus_radio_conversion_manual_vol3.pdf

Wi fi blocking paint: I swear my flat has already been painted with this stuff. Nice to think it could be used in cinemas to interrupt mobile phone signals.
http://www.psfk.com/2009/10/anti-wi-fi-paint.html

The schematic of the SCR-522 is available in the CQ Surplus Schematic Handbook. You can download the entire book at
http://home.comcast.net/~aa4df02/download.htm
It is a VERY large file (about 22 MB) and is in a "zip" format. The SCR-522 schematic is on page 93 (the table of contents lists page 92 but that is the description of the SCR-522, the schematic is on page 93).

I just happened upon http://www.cdvandt.org/ - tons of interesting info - particularly take a look at the exhibits http://www.cdvandt.org/exhibits_new.htm - Holy Cow! [must be an Indian – *Ed*]

RACAL Go to MAURITRON Technical Services in the UK They have heaps of RACAL manuals, http://www.mauritron.com - They have paper as well as downloads and the prices are reasonable and the quality I got was excellent.

NVIS Propagation model - http://greg-hand.com/hf.html

SP-600 guru James (Andy) Moorer's website is at http://www.jamminpower.com Interesting musical electronics applications, too - *Ed*

For R-388 AVC problems, Al Klase has a good article on his website and on AVC systems in general, incl tips on measuring resistance. Do a Google on him and you'll find it - "skywaves" in the URL I think.

You want to convert your CRO into a clock?
http://www.sparkfun.com/commerce/product_info.php?products_id=9306

Check out this video on WWII airborne radios:
http://www.youtube.com/watch?v=Ms84WfJwalI

Some T&M urls

If you're looking to trade electronic components, you might be interested in the ecbarter group I (Dennis) moderate:
http://finance.groups.yahoo.com/group/ecbarter/
We're a small group of people trying to turn the excess (but not surplus) items we've accumulated into something more useful.

Recently Stan (Griffiths – TEK guru) asked for a volunteer to post a few of his pictures to the Tekscopes photo section. I (Tom Jobe) volunteered to do that, and have put up two of his pictures in an album called "Stan Griffiths" in the photo section. http://tech.ph.groups.yahoo.com/group/TekScopes/photos/browse/8f51?c=
One is a picture of silver migration on a ceramic strip, and the other is about the dreaded AP resistors. With a photo editing program, I added Stan's comments under each picture so it is all with the picture.

Here's a pair of 500-series scopes hard at work at the Western Electric Washington Service Center in Arlington, VA, sometime around 1969:
http://long-lines.net/operations/WE-WSC/p014.html

I scanned the manuals for the P6006, P6008, P6011, and P6013A probes. The PDF files can be downloaded from http://w140.com/kurt/manuals.html -*Kurt*

P6045 probe manual: http://www.slack.com/david/pdf/TekP6045.pdf
015-0073-00 power supply manual:
http://www.slack.com/david/pdf/Tek015-0073-00.pdf

What's the main advantage of a frequency synthesizer as opposed to a function generator or regular frequency oscillator?
Stability, noise, and control.

Any serious discussion of Phase Noise measurement should start here: http://www.ke5fx.com/phase_noise.pdf (850K, OCRed version of the Decker & Temple app note from HP)

Tek produced a technical note called Preventing Sampling Head Damage. I've (Craig Sawyers) scanned it to here:
http://www.tech-enterprise.com/tekstuff/sampling1a.jpg
http://www.tech-enterprise.com/tekstuff/sampling2a.jpg
http://www.tech-enterprise.com/tekstuff/sampling3a.jpg
http://www.tech-enterprise.com/tekstuff/sampling4a.jpg
http://www.tech-enterprise.com/tekstuff/sampling5a.jpg
http://www.tech-enterprise.com/tekstuff/sampling6a.jpg
Although the paper is concerned more with the 14GHz S4 and S6 in which the diodes are very low capacitance and fragile, the precautions are good ones for working on sensitive stuff. I kitted my bench with all the antistatic paraphernalia after I blew up a double MOSFET in a 7854 with static from handling (Deane Kidd supplied the replacement).

Here is a very easy to make pulse generator http://i9t.net/fast-pulse/fast-pulse.html (5 parts) that generates pulses on the order of 1-2nS. That and any VHF sig gen is all you really need for signal sources.

Try Walter at Sphere walter2@sphere.bc.ca or Gary at Micheme - LLTS@maine.rr.com. Both have good quality parts for 7k TEK.

For the latest Agilent info, sign up for Email Updates at emailupdates@agilent.com.

As a previous customer of The Macservice Group, we thought you should know we are now called TMG Surplus. We still provide the same great prices on second hand electronics test equipment, but we now offer more convenience and ease of purchase. You can find our new eBay store at:

TMG Surplus eBay store
(http://stores.shop.ebay.com.au/tmgsurplus)

I paid AU$30 for my copy of the TEK 2215A service manual - *Ed*. Why didn't I just download it?
http://www.ko4bb.com/cgi-bin/manuals.pl?dir=Tektronix/Tektronix_-_2215A

Ed recently acquired a TEK 453 and has been searching the WWW for suitable probes. Here are links to several he found.
http://www.stanleysupplyservices.com/product-group.aspx?id=1170
http://www.caltestelectronics.com/www/itemdetails.asp?CF=QS&ItemCode=CT26
76A&cat=cat1&QSID=1.a.2&ID1=1452
http://www.apogeekits.com/oscilloscope_probe_100.htm

TEK 2246 service manual can be found at this link:
http://rapidshare.com/files/262511640/2246_service.pdf.html

If you want to see what is inside a Mini-Circuits resistive splitter, take a look towards the bottom of my (Jack's) web page http://www.cliftonlaboratories.com/6_db_hybrid_combiner.htm.

For the hairy edge of ultra wide bandwidth stuff have a look at http://www.picosecond.com/ . Their baluns go from 200 kHz to 17 GHz, and their resistive power dividers from DC to 40 GHz. Their fastest pulse gen has a rise time of 9 ps using non-linear transmission lines to sharpen the already fast edge from a step recovery diode.

http://www.cliftonlaboratories.com/6_db_ hybrid_combiner. htm#Minicircuits_ZFRSC-2050
That should do what you want. BTW, I don't know specifically about this part, but Mini-Circuits often offers such devices with a choice of connectors to choose from.

There is a very basic transformation for the two 3-resistor topologies. Search for "Delta Wye Transformation" (or "Wye Delta Transformation"...) and look at http://www.microwaves101.com/encyclopedia/Resistive_splitters.cfm.
Again, they do not discern between splitter and divider, although this is an otherwise very competent site. Also look at http://www.aeroflex.com/AMS/weinschel/PDFILES/PowerS&DFAQ.pdf

For an in-depth discussion look at http://www2.rohde-schwarz.com/file_5601/1EZ51_1E.pdf and http://www.msc-conf.com/proceedings/PDF%20files/MSC_05/PDF%20files/3E2.pdf

Tucker.com is your friend for quick T&M specs:
http://www.tucker.com/java/jsp/product_partno494AP_invid10156_condR.htm
Just substitute the part number you want where it says 494AP

Perhaps you are looking for the Tektronix Concept Book Series.
http://www.slack.com/concepts.html
There is a complete list with some available as pdf files.

Tek PS280/283 Service Manual - You can access this file at the URL:
http://groups.yahoo.com/group/TekScopes/files/Tek%20PS280-283%20Service%20Manual%20%26%20Schematics.pdf

A new module to replace defective Horiz driver IC (U800) is now available. This is not an old renamed IC but a brand new replacement module that fits in above the

U800 location. Please contact Thomas Lafay at lafaytho@msu.edu . This is a limited offer.

Have you downloaded the free HP/Agilent reference material that I (Brooke Clarke) list at the bottom of: http://www.prc68.com/I/Z.shtml

You all might not be aware but, there is a place to discuss ANYTHING you wish regarding classic TEK gear, electronics, as well as your thoughts on: the classicTEK forums over at the classictek.org website we have started.

Want to measure capacitors? Blue ESR meter
http://www.electronix.com/catalog/product_info.php/cPath/17_489/products_id/18234
http://www.flippers.com/BlueEsr.html
The one I (David Husk) have and so far like. Atlas ESR - Capacitor Analyser - Model ESR60
http://www.peakelec.co.uk/acatalog/jz_esr60.html
An interesting meter
RADIO FREQUENCY CAPACITOMETER AND ESR "ESR-micro of v3.1"
http://au.babelfish.yahoo.com/translate_url?doit=done&tt=url&intl=1&fr=bf-home&trurl=http%3A%2F%2Fwww.radiodevices.info%2Fesr%2Fesr.htm&lp=ru_en&btnTrUrl=Translate

It has the name "EA" ESR and Low Ohms Meter. I did a Google search on ea esr and found this: http://www.nippur.hu/english/esrmeter.htm which addresses changing the PIC in the EA ESR, but I could not find anything about the meter itself.

Looking further I find it is a kit designed by Bob Parker and sold by Dick Smith out of Australia. It is now sold by a bunch of folk in both kit and non kit forms. The manual and lots of stuff is available here:
http://www.anatekcorp.com/BlueESR.pdf
I have no idea how it works but it does work very well. I have used it for both in circuit and out of circuit esr tests and even for selecting matched resistors for a RF attenuator.

You have test equipment manuals you want to share? Upload them to KO4BB's site http://www.ko4bb.com/cgi-bin/manuals.pl Much easier to upload to and get downloads from than the other sites you will no doubt hear about.

You should be able to upload a file to the groups file section. I can see other files there around 3.5mB in size. If you are not sure how to, have a look at this Yahoo help page
http://help.yahoo.com/l/us/yahoo/groups/original/members/web/web-05.html

The HP 3437A can do 5,700 readings per second, see:
http://www.prc68.com/I/HP3437A.shtml

If you go to this link you will find good info on choosing probes:
Choosing a probe.....

This is good too... http://www.barrytech.com/tektronix/probes/tekprobes.html

Here's another link on learning to use a scope:
http://www.tek.com/Measurement/App_Notes/XYZs/
This is a classic we used at TAFE for teaching new electronics technicians - *Ed*

6 decades of measurement with HP stuff. published 2000
http://cp.literature.agilent.com/litweb/pdf/5980-2090E.pdf

For scoping sensitive locations there is a connector that accepts most probes with 5 mm gnd barrels. This part is solderable and can be tacked directly to the point of interest. It vastly improves noise rejection. The closer to the ground, the better. See included link. http://www.icphotos.org/photo/33JR1152.html

There are some of the Concept books on probes
http://www.leftfield.org/~dd/concepts.html

The HP 680 manual is at http://bama.edebris.com/manuals/hp/680/

The HP 8555A manual is on http://bama.edebris.com/manuals/hp/8555a/

You want to build a curve tracer adapter? Try this one.
http://sites.google.com/site/aaadiag/home

TEK 453 blade switch knobs? About 1/4 way down the list.
http://www.sphere.bc.ca/test/tek-parts/tek-knobs.html

Check this out for an inexpensive cable!! I made one and it works GREAT!!
http://www.jammaboards.com/store/tektronix-tm500-extender-kit/prod_135.html

HP 8640 switch wiper fingers and gear parts problems? Yeah easy to fix, A tiny tiny bit of epoxy worked well for me. See Jose's site, for some details:
http://jvgavila.com/wb1.htm
You can "fix" any cracked gears while you're in there.

I had the same problem with an HP SA and in my VNA; happens in the autumn of their life, then the switch-leaves fall off. I (Fred Schneider) used epoxy.
http://www.hamforum.nl/viewtopic.php?f=82&t=1085