



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, we have tried to give due credit and obtain clearance.



What is happening here?

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Annual General Meeting

St George Amateur Radio Society, Inc

Venue: 1st Kyle Bay Sea Scouts Hall, Kyle Parade, Connells Bay, Connells Point

Date: 2010-02-03

Time: Start 1930 hours

Agenda

1. Welcome guests
2. Select Chairman for AGM
3. Select scribe for AGM
4. Apologies and proxies
5. Minutes of the last Annual General Meeting: Proposal that we accept the Minutes of the 2009 AGM; Seconder; Vote
6. Matters arising from the minutes.
7. President's Report: Proposal that we accept the President's report; Seconder; Vote
8. Treasurer's Report: Proposal that we adopt the Treasurer's report; vote.
9. Matters arising from the President's and Treasurer's Reports.
10. Resignation of last year's executive committee members.
11. Select Returning Officer and scrutineer, as required.
12. Nominations for positions for the 2010 executive
 - President
 - Vice-President
 - Secretary
 - Treasurer
 - Publicity Officer
 - At least 2 ordinary members

For each position, we need Proposer; Seconder; acceptance by nominee; vote if more than one nominee for a position – can be by show of hands or secret ballot.

- Selection of Dragnet Editor, Welfare Officer and Examination Officer.

13. Any other business

14. Close of AGM

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Hymns ancient and modern

Clubroom

When do we get into tidying up our clubroom? Have a look in there – if anything takes your fancy, grab a committee member and make a ridiculous offer – you may be surprised!

Club projector

We were successful in 2009 in our application to the WIA for funds to support our ongoing efforts in attracting new members to the hobby. With the grant, we will acquire our own digital projector. All we need are your expert presentations – now, you don't need to worry about your board writing skills.

Foundation licence

The 2nd edition of the *Foundation licence manual* is available. The *Foundation licence manual* is written at such a level that most people with little knowledge of electronics and radio can read and gain enough knowledge to pass the knowledge part of the licence assessment. If you are just starting in amateur radio and want to get your licence, we can order copies for you. Copies will be available at the meeting for your perusal.

We now have two Assessors in the club. We really need three as a minimum to run classes and assessments. We plan to offer assessments at the club rooms this year. Contact Brian, VK2GCE to start the ball rolling.

EU Ham Mag

As Vincent, F5SLD, the editor could not find a sponsor, to continue receiving copies of the magazine, you now need to subscribe real money. You can subscribe online by credit card (secure payment) or by money bank transfer (IBAN/BIC). Have a look here:

<http://www.ham-mag.com> and click on 'join us'.

You can access older files at the URL:

http://uk.groups.yahoo.com/group/ham-mag_en/files/ham%20mag%209.pdf

Rest of the year

Shortly after the AGM, the newly-elected committee will meet to discuss the coming year's program. If you have a particular presentation you would like to give or to see, contact one of the newly-elected committee members.

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

What you may have missed in 2009

December Club meeting, 4th

Roger Harrison, VK2ZRH has agreed to delight us with the joys of 6 m.

October Club meeting, 7th

This was a Show and Tell evening, specifically aimed at newcomers to amateur radio. Every member who attended brought along a potential new radio amateur, thus doubling the usual attendance from 4 to 8. Well done!

Ongoing matters

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.

Back issues of Dragnet should be available there now. 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 smoke and mirrors for wireless communications.

Mt Bindo repeater

This still needs your support – not just money, but also time to clean up the site, check the batteries and solar cells ...

From here and there

Once more unto Morse

Both KSM and K6KPH will return to their normal operating schedule this Saturday 1/30.

KSM will begin press and weather broadcasts in CW at 1000 PST, 1800 GMT on HF and MF. RTTY broadcasts will begin at 1100 PST, 1900 GMT on 8 Mc and 12 Mc. The KSM traffic list will be sent at 1300 PST, 2100 GMT. A repeat CW weather broadcast will begin at 1330 PST, 2130 GMT.

See <http://www.radiomarine.org> for KSM frequencies.

K6KPH will guard its calling frequencies beginning at about 1200 PST, 2000 GMT. Those frequencies are 3550 kc, 7050 kc, 14050 kc and 21050 kc. K6KPH is open for general amateur traffic including KSM signal reports.

Regards,

Richard Dillman, W6AWO

Chief Operator, Coast Station KSM

Maritime Radio Historical Society

<http://www.radiomarine.org>

Useful urls

There is a document on the web by Ken Corwin that lists the history and differences between the variants [of the BC-348]. Visit

<http://www.nj7p.org/history/bc-348.html> to determine the variant you have.

Jack Antonio, WA7DIA

Do you need HP and TEK manuals? Here are a couple of good sources:

1. Dave & Lynn Henderson

ArtekMedia, Out-of-Print Technical Manuals

www.ArtekMedia.com

manuals@artekmedia.com

2. Waltb said 'we are moving. Going to downsize to a condo .got a pile of H / p & TEK manuals to dispose of big list. walt_b5@aol.com

Found a new (to me) website with manuals for military and other gear at:

http://www.radioamateur.eu/schemi/Surplus_NATO/z_Surplus_NATO.php

They also have various amateur manuals on the website accessible via the basic URL.

The Air Force maintenance manual for the A-26 is available for download at:

<http://vectaris.net/id404.html>

The 2nd section has many photos and data on the SCR-274N and SCR-522 and

other radio installations in the aircraft. Note, these are very large downloads!
Wayne Eleazer, WB5WSV

Here are the details on MicroWaveandTestEquipTrader:

Group home page:

<http://groups.yahoo.com/group/MicroWaveandTestEquipTrader>

Group email address: MicroWaveandTestEquipTrader@yahoogroups.com

The 2010 calendar using pics of ham radio stations is available for free downloading at: <http://home.comcast.net/~chnord/wa1kpd.html>

Visit My Boatanchor Collection there, too.

73 Carl Nord, WA1KPD

A great resource for researching old parts, equipment, etc.:

<http://www.radioshackcatalogs.com/>

It has complete copies of most all of Radio Shack's catalogs, from 1939 to 2005.

Of course, before the 70s, Radio Shack was a hard parts dealer, similar to Allied.

73 Lee Craner WB6SSW

An interesting article about amateur radio and Linux or should that be about Linux and amateur radio? <http://www.linuxjournal.com/ham>

Adam VK4IM

Go to: <http://faucheux.free.fr/f5sld/6e.pdf> and scroll down to page 31. Good story about a B-24 radio op shot down over Germany. [it's a 2.4 MB download.]

Oh... and there's an antenna on page 36 you won't want to miss....

Dave Stinson

Here is an internet source for vacuum tube information I found on Wikipedia:

<http://en.wikipedia.org/wiki/12AX7>

Bob AD5VJ

PDFs of GE and RCA tube manuals (and others) are downloadable at:

http://www.pmillett.com/tube_data.htm

Nick England, K4NYW

Two that I've used before:

www.nj7p.org/Tube.php<<http://www.nj7p.org/Tube.php>

<http://tdsl.duncanamps.com/tubesearch.php><[http://tdsl.duncanamps.com/tubesearc](http://tdsl.duncanamps.com/tubesearch.php)

[h.php](http://tdsl.duncanamps.com/tubesearch.php)

Howie Holden WB2AWQ

Refurbishing our beloved gear

Plastic parts

There was a discussion on the forum recently about the (im)practicalities of reviving some of the unique Tek made ICs. I wonder if anyone has considered doing the same for some of the plastic parts. If the tooling still existed, and Tek gave permission to do so (a big if), it may be possible to produce a run of some of the high use parts for a reasonable price. If the tooling is gone, it is probably not feasible. Note that even if the tools were available, it would probably still cost a few thousand \$ to set it up and make a run at a plastic molding shop FOR EACH PART NUMBER. So it would only work with the parts with the highest demand. While there are thousands of plastic parts in the category, there are probably a few which the demand volume would justify a run. Two I can think of are:
> 366-0215-01 – the little slide on knob cap used on many lever switches and most of the AC-GND-DC selector switches from 500 series days through 400 and 7000 series. This one seems to be often lost or broken on many old instruments I see or own. It does have a stamped metal insert, which complicates it a bit.

Don't know the part number, but the molded feet/cable wrap on many 400 series instruments. These never seem to take the abuse.

Thoughts?

Steve

There's always: <http://www.shapeways.com/>

Per-piece price is high, but one 'piece' could be hundreds of small parts.

The fluorescent lights used in most facilities are very hard on plastics. Yellowing was usually obvious on gray plastics.

Jerry Massengale

Perhaps I missed exactly which plastic parts are trying to be reproduced, but I will again suggest silicone flexible molds and castable Urethane.

Anyone capable of repairing equipment will be capable of molding parts this way. You don't need to machine a mold in the traditional sense. You need a master part, and it's amazing what kind of repairs and artistic endeavor can make a broken part into a suitable mold master.

It is possible to add supplemental elements, such as conductors, bushings and such into the new parts as they are cast. It is also possible to blend pigments into the Urethane to make the finished part whatever color you desire.

The biggest tick is to anticipate where air bubbles might accumulate during mold casting (pouring) and provide adequate vent (bleed) holes to prevent voids in

finished parts.

Because the mold is flexible it is possible to create molds and parts which have undercut and improper 'draft' which could never be made with hard tooling and injection molding.

By the way - its fun!

Ken

I think most people here would probably be able to make a small vacuum chamber to eliminate bubbles.

Do you know what shelf life this stuff has (silicone mold material and resin)? I want to try this like forever but never is a part important enough to let whole cans go to waste.

Stefan Treathern

It has a shelf life of several months as I recall. It has been a while since I molded anything, but I still have information.

I will look up the company names and such and try to send you some more information tomorrow evening.

We found, as you said, that first you want to build a vacuum chamber. We used an inverted spherical glass fish bowl purchased from evil-mart and we turned out a Delrin base and fashioned a foam seal. We used a small hand valve to vent to ambient, vacuum gauge and pump. The glass bowl was very important because we could see what the material was doing. We would let it rise almost over the top of a disposable plastic cup before we would open the valve a little and let the dome crater. We repeated this several times until the material was unwilling to crest very much.

To make a two part mold takes two days. You create the bottom half on day one and the top on day two. It is very important to separate the two halves with a layer of petroleum jelly you paint on with a small brush before you cast the top or they will forever bond into a single piece.

One very important note: You can use almost anything as a mold master (master part) except silicone objects, unless you create a reverse mold using Urethane and don't use porous objects.

When you are making the mold the silicone pours very slowly and is very thick. It is hard to believe that it will find its way into all the details - but it will! We have molds that captured the machining marks from the end mills. In my mind - that's detail.

The real 'art' is figuring out how to mount the master part as you cast the silicone mold around it. It is also extremely important to anticipate where air bubbles could become trapped and provide bleeder (vent holes). It is very easy to employ a

combination of adding little dowels to fashion vents as you cast the mold AND to use small diameter thin wall brass tubing from a model shop as drills to add vents later.

We also discovered that a pressure cooker, modified slightly and connected through a regulator to a compressor, becomes a very nice pressure chamber for curing parts. If you place the mold into the pressure chamber just after the pour and elevate it one or two atmospheres it helps hold gas in solution and reduces the formation of gas bubbles or voids in the finished part.

Ken

Your description of the fish bowl _really_ scares me, which is why I post this to the list.

Please do NOT use glass vessels as vacuum bell jars if not rated as such. They can easily implode sending high velocity shards precisely aimed (via Murphy's law) to your face and eyes. (I suppose a little like a CRT but potentially even more dangerous).

Vacuum implosions are dangerous stuff. Instead, use a pressure cooker with a really thick Lexan plate as a lid (for observation).

I have some experience with vacuum potting since we pot electronic assemblies at work and I sometimes pot my prototypes. What you describe sounds a lot alike, just with the added silicone mold part. Maybe I try casting something out of potting compound in a mold made from RTV silicone...

ST

Stefan's point is well taken and very good advice!

We were comfortable with our choice because the fish bowl was amazingly heavy walled and spherical. Additionally, we conducted several safety tests at higher vacuum than we intended to operate. Over time we have used that setup to make hundreds of molds which in turn were used to cast several thousand parts.

All said however, Stefan's advice is proper and should be heeded. No matter what setup you configure, define a very safe way to test it for safe operation and know you have a considerable safety margin above your intended operational parameters. Whenever working with chemicals and vacuum OR pressure safety glasses are your best friend second only to good shop practices.

Certainly, a vacuum rated chamber is the best choice! It is very important to be able to see what the material is doing to effectively manage the out-gassing.

We were making modest sized parts and used plastic SOLO cups (probably 8 oz) as mixing containers. The material more than doubles in volume as it tries to out-gas. As it domes and nears overflowing your slowly vent to ambient, the dome craters and you repeat until the material no longer expands very quickly.

I imagine given a large enough mixing container and some experimentation you

could calculate the volume and time necessary for a given quantity of silicone and never need to watch or vent - just wait a proper amount of time.

Molding is a great way to replicate parts - but certainly exhibit caution and spend some time to understand the physics and chemistry you are working with.

Ken

In my head I somehow had myself carefully cutting along the sides of the master until I could extract the knob or whatever, leaving a hinge as large as possible to keep the mold aligned. Is there a reason why this would not work?

Your description reminds me of metal casting where the master is cut in half and mounted to two sides of a board which forms the sand molds.

ST

All the molding I have done used room temperature materials with great success. This of course, excludes any elevated temperature post cures for thin parts.

Although cutting the original from the mold is certainly possible I still advocate making 'two pour' molds using petroleum jelly to create a boundary layer. I don't think cutting out a part is going to be much fun, but it will use up time!

You actually don't need to cast in metal keying pins. Once you have created the first half of the mold, the keying dowels can and should be removed. This leaves depressions in the first half. Treat them with petroleum jelly just like the exposed mating surface and the second pour will fill them creating the keys.

I do not recall if there are any recommendations about raising the temperature of the silicone when making the molds and certainly if it was less viscous it would pour much more easily - but as it settles around the master part it captures absolutely every detail. The first time you use it you will have doubts, but it really does capture every little aspect of the master part.

There are different molding silicones and such and the ones typically used to copy someone's face or a very large detail can even be brushed on, but for smaller parts I've only been exposed to pour mold making and then pour casting.

Ken

Shelf life, according to the distributor, is 1 year for silicones (ie, for the mold) and 6 months for urethanes. This is for *unopened* product. Once opened they said they cannot quote a shelf life.

So these are 1-use kind of products: use it all now or throw away any remainder.

Dave

I dug out my information on castable Urethanes as I promised. This email will be 'type as I read and remember', so it might be a little disorganized. Many, in fact

most, of the products we used were made by BJB Enterprises in Tustin, CA.

www.bjbenterprises.com Telephone 714.734.8450

We most often purchased these chemicals and our other supplies from:

BURMAN INDUSTRIES

14141 Covello St. Suite 10C

Van Nuys, CA 91405 www.burmanfoam.com Telephone: 818.782.9833

We used rigid casting urethanes such as BJB TC-881 A/B (creamy white unless pigmented) and BJB TC-1630 A/B which is dark gray in color. Both of which can be cast into tin cure silicone molds. We used WALCO VI-SIL Silicone V-1067 with V-1067 BLUE catalyst.

For clear parts we used BJB WC-782 A/B which must be poured in a platinum cure silicone mold. We used BJB TC-5050 A/B Platinum cure silicone.

There is a wide selection of pigments which can be added or mixed to any degree desirable. In the Burman's catalog I'm looking at, the pigments for solid color materials are found under Urethane accessories.

Getting the BJB and Burman's catalogs will provide useful information as well as sources for supplies. Additionally, Polytek Development Corp. in Lebanon, NJ (908.534.5990) (sorry no web address) has, or had, a publication/catalog 'Mold-making & Casting methods & materials manual & Catalog.' It provides good information as does the Dow Corning 'A Guide to techniques and Materials' and 'Silicone Mold-Making Materials'.

Another source is 'Smooth Talkin' ' from Smooth-On (800.762.0744) and another is Castcraft in Memphis, TN (901.345.5753) who had a series of thick pamphlets regarding mold making and casting.

I recall there was a compressed gas agent in a typical spray paint sized aerosol can that you could spray into certain materials just before you closed the can back up that displaced the air and extended useful life.

You can by small quantities such as quarts and open/close and use up the material over several weeks or a few months. It does become unhappy after a while, but it's really not an open once and then you're doomed scenario.

Ken

[*Editor's note:* addresses and phone numbers may have changed, but there are numerous manufacturers and suppliers so it should be simple to get started.]

Editor's comment – this is about 5% through a large collection I have on refurbishing electronics goodies – more next time, on transformers and I have been offered an article on tuning a gamma match.

Society committee contact details

President:	Paul Howarth	VK2EPH vk2gx@sgars.org	0418 400 389
Vice President:	Peter O’Connell	VK2EMU vk2emu@tpg.com.au	9584 3236
Secretary:	John Sutton	joanieisonline@optusnet.com.au	
Treasurer:	Paul Smith	VK2ZSA psmith50@bigpond.net.au	9520 7323
Committee:	Brian Clarke	VK2GCE brianclarke01@optusnet.com.au	9545 2650
	Peter Mahoney	VK2JTV	
Publicity:	Peter O’Connell	VK2EMU	9584 3236
Welfare:	Alan Sullivan	VK2BAS	9533 1712
Licence assessors:	Brian Clarke, VK2GCE and Brian Conner, VK2ZBP		
Dragnet Editor:	Brian Clarke	VK2GCE brianclarke01@optusnet.com.au	9545 2650

Dragnet material

Dragnet material can be sent to the Editor via:
Email: brianclarke01@optusnet.com.au (preferred at the moment)
or mail to the editor’s home address which is OK in the Call Book.

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 7.30pm.

Visitors are always welcome

St George A.R.S. 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.

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