SURREY RADIO CONTACT CLUB
AUGUST 2024 – No 984

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MONTHLY MEETINGS NORMALLY ON 1ST AND 3RD MONDAYS 7.30 FOR 7.45pm

Meetings at St. Paul's United Reformed Church, Croham Park Avenue, Croydon CR2 7HF

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1st MEETING Monday 5th August: "On-the-Air" with John G8MNY

2nd MEETING Monday 19th August: Fix-it, Move-it-on and Social Chat with John G8MNY

SRCC COMMITTEE 2024/25

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EDITOR'S OPENER

Dear Members & Friends, welcome to the August 2024 SRCC Newsletter.

Well, after a manically busy couple of months (three major 24 hour contests under portable conditions in an eight week period) - plus a bout of COVID - I am pleased to say that provided I survive until Friday this week, it's off to Exmouth for 10 days of holiday with my son Guy and elder granddaughter Moo (10 years old now…where do the years go ?!): I'll be ready for it!

So, after a mercifully brief intro, here we go…

73, Quin G3WRR

PREVIOUS MEETINGS

July A meeting (1st) Construction Contest. The number of entries was substantially lower than in 2013, with six entries from three members. These were as follows:

I**tem 1 - 15 cm QRO transverter (Gareth G4XAT):** This is expertly described in the article of the same name by Gareth below.

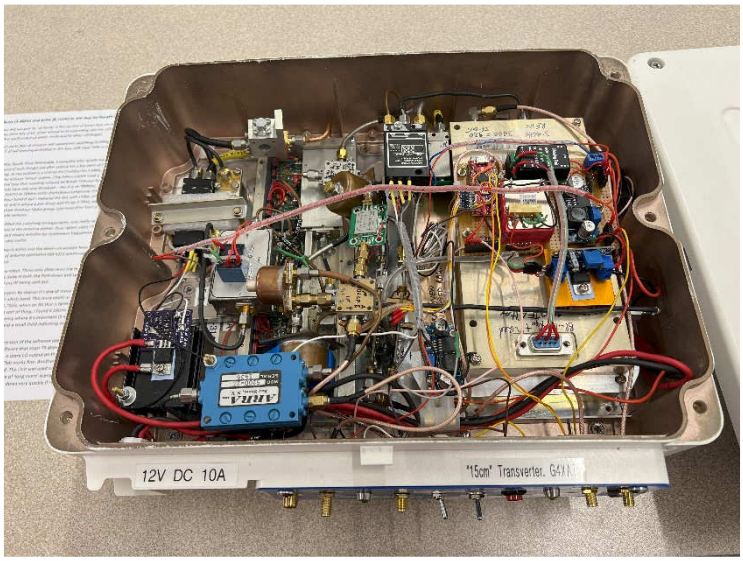
Item 2- 160/80m ATU (Quin G3WRR): This was built for use in HF NFD. It is a simple parallel tuned ATU to match the rig to the 160m doublet used on 160m and 80m. Only aspect worthy of note is the use of a coil out of the PA section of a T1154 wartime aircraft transmitter.

Item 3 - HF band auto ATU for balanced antennas (Quin G3WRR): This was also built for HF NFD in an attempt to get round the problem of having to rapidly switch ATUs for six bands - an activity which we never got to work too well…. The exhibit was basically a CG300 auto ATU built into a plastic box - but as the CG3000 was designed for unbalanced antennas and the NFD antenna was balanced it was necessary to float the whole ATU with a current balun on the input – with the consequential need to choke off the DC power input using a couple of toroids.

Item 4 – Drake L-4B linear (John G8MNY). This item had been acquired by John in partially working condition. It had been fixed by replacing one of the twin power triode PA valves and a couple of other modifications which your scribe captured on a sheet of paper and then lost!

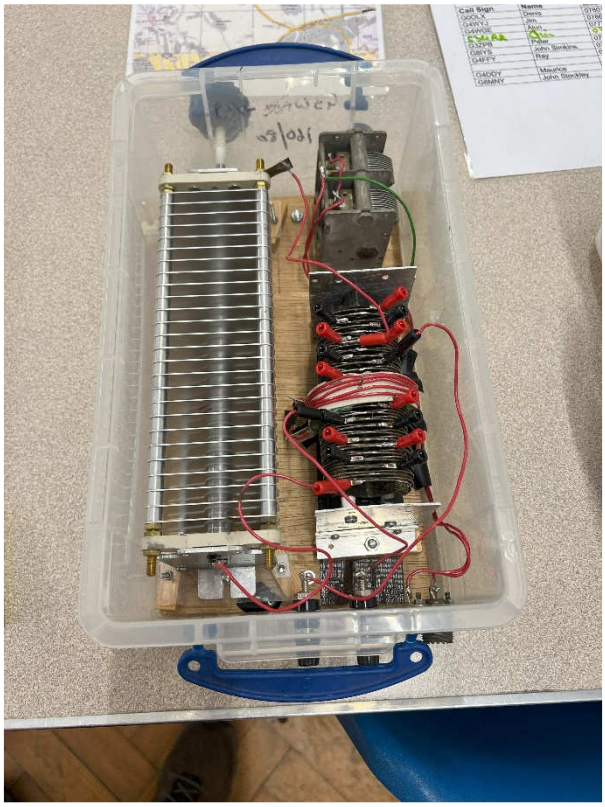
Items 5&6 - two other items from G8MNY: these were shown and described but, as with item 4 the details are not to hand: these will be provided in next month's Newsletter.

Following voting (useful practice for the then upcoming AGM), the results were as follows:
First prize – item 1 (G4XAT): SRCC Coronation Cup + £40
Second prize – item 4 (G8MNY): Basil Wardman Tankard + £25
Equal third prize – items 2 & 3 (G3WRR): £10.



INTERIOR OF G4XAT's 15cm TRANSVERTER

G8MNY DISPLAYS HIS DRAKE L-4B LINEAR



G3WRR's 160m / 80m PARALLEL TUNED ATU

G4XAT RECEIVING FIRST PLACE CASH PRIZE

July B meeting (15th) This followed the current Fix-it, Move-it-on and Social Chat format.

FUTURE MEETINGS

August A meeting (5th) "On-the-Air" evening where John G8MNY will be setting up an operational amateur radio station.

August B meeting (19th) This will follow the current Fix-it, Move-it-on and Social Chat format.

September A meeting (2nd) This will be “An introduction to VarAC” by Ray G4FFY. VarAC is a keyboard-to-keyboard protocol (i.e. in simplest terms, think of RTTY) based on the earlier JS8 protocol but with more “bells and whistles”.

September B meeting (19th) This will follow the current Fix-it, Move-it-on and Social Chat format.

73, Quin G3WRR

A “15CM” QRO TRANSVERTER – 9CM (3.4GHZ) AND 6CM (5.7GHZ) IN ONE BOX BY GARETH G4XAT

One of the problems with trying to make and use gear for ‘all bands’ is the number of boxes that you end up with, all of them needing connecting to various other bits of kit. What started as an interesting idea has, after over a year’s work (with some dormancy for other stuff) ended up pretty much exactly what I envisaged. As I have found out, if you can find the right parts (lots of research and subsequent searching) building microwave equipment isn’t that difficult. There is a LOT of self-learning embodied in this box, with input from a number of helpful amateurs, forums etc.

The heatsink and case were purchased from eBay (South-West Renewable, a company who recycle the hardware from defunct solar inverters and a bargain source of such things) and after cutting out a few parts of the plastic inside, I started eye-balling up where to fit things. At the bottom is a 50Watt PA (Toshiba) for 3.4GHz, mounted above that is the receive front end block from the defunct ‘Ionica’ system. (The Ionica system used a microwave transmitter in order to provide the local loop thus avoiding reliance on British Telecom for this final link to the consumer). These excellent filtered front ends have only one drawback – the IF is on 950MHz. That is not an issue when your RX solutions cover 144-2450MHz (DATV) or 70MHz-6GHz (Portsdown/ Langstone TRX). This unit, when bought, had been hacked to allow for an amateur band IF but I replaced the link with a filter on 920MHz, with thanks to the Microwave Parts Service. The other end is where a pre-driver and PA for 5.7GHz were bolted down. These were purchased from the South Birmingham Amateur Radio group. Low level drive from a Pluto gives 15W out on 5.7GHz. All the PAs are protected by suitable isolators.

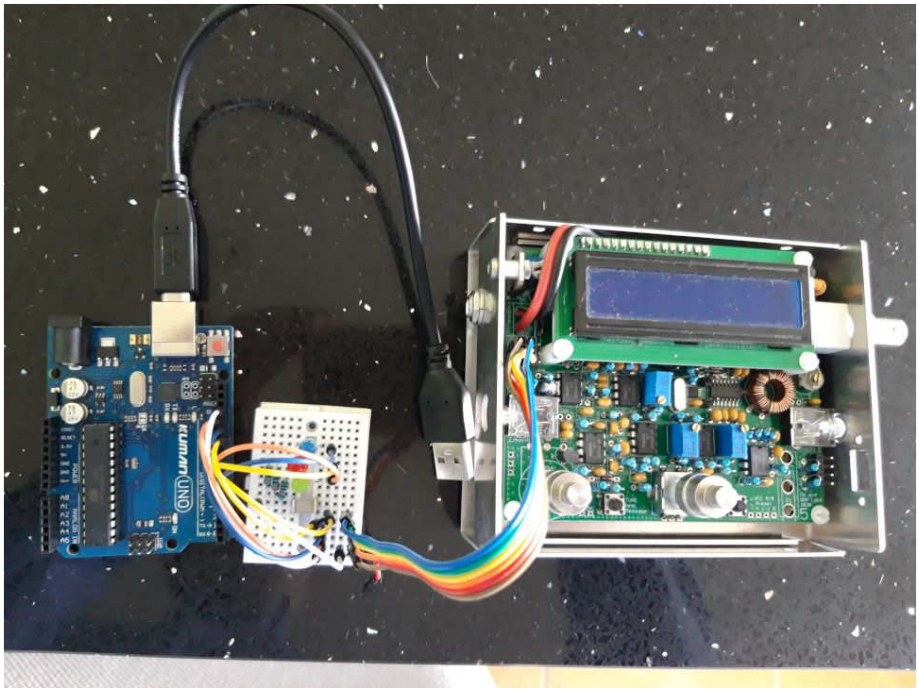
As my drive source has separate RX and TX ports it simplified the switching arrangements, only really needing signals routing to the Ionica front end and transmit outputs to the antenna socket. Over recent years I have actively sourced microwave relays, SMA hard-line cables and mixers suitable for microwave frequencies. The ease of looking up a spec on your phone whist ‘out shopping’ is very useful. Local oscillators are required for the Ionica (2.48GHz+920MHz=3.4GHz) and the down-conversion from 5.7GHz (5.76GHz -2.36GHz=3.4GHz). These were arranged via a pair of Arduino controlled ADF4351 synthesisers with the second output of one feeding a TX up-converter (see why later).

The sequencing is all done via ‘indicator’ contacts on the various relays. These only close once the main RF contacts have also closed. So far, so good. There is also software delay in both the Portsdown and Langstone software (100mSec) between the PTT closing signal is issued and any RF being sent out. A latching relay was used for the band select. This routes the RX stream. By chance it’s one of those that draws no current one actuated/latched, so I simply used a DP toggle to select which band. This must count as the simplest band change I have ever managed! A low-noise preamp is used on 5.7GHz, when on RX that is terminated by the transfer relay with a 50R load. Transfer relays are very handy for that sort of thing, I found 4 18GHz rated units on eBay for £80. Bit of a bargain. Pipe-cap filters select the desired frequency where it’s important (3 in all) and some indicator LEDs let you know what’s going on. DC, Band, TX on 5.7GHz and a small DVM indicating output watts on 3.4GHz.

Why TX up-converting? The Portsdown DATV system only supports one version of the software used in the Pluto (the SDR, nominally 70MHz-6GHz). There is a bug in that version of the software that stops TX above 4.3GHz. Something to do with a 32bit registers overflowing. As I had a spare mixer, a spare LO output on the required frequency and a combiner all I needed was a Pipe-cap filter set to 5.7GHz. That works fine. Another version of the software will work at 5.7GHz direct on a laptop, so I have both bases covered. The Unit was used successfully during the recent DATV contest. Cooling has since been added as a just in case of 'long overs' scenario. DC switching is done with big-spec P-Type MOSFETS as it's possible to shut things down very quickly if required, a lot faster than fuses and maybe fast enough to save your PA devices.

FUN WITH MICROCONTROLLERS by RICK M0LEP

I seem to have spent most of this month playing (or possibly "fighting" is a better term) with computers and micro-controllers. The easy bit was setting up my small laptop and a new 4K screen to do stand-in duty as a desktop until I can get a more ergonomic replacement. I've been getting a Raspberry Pi up and running to monitor my summer-house solar power system. The complications started when I decided that the on-board Wi-Fi antenna was never going to handle a reliable Wi-Fi link. Adding an external Wi-Fi antenna to a Raspberry Pi Zero 2 W involves cutting a circuit board track and soldering a U.fl socket to the board. It's a good thing those sockets come in strips, and I got ten. I managed to destroy four of them before I got one on the board that stayed attached and actually worked reliably. The beast is now happily running 24/7 from the solar system's battery. I just need to do the software....



Then I tried updating the firmware in the QRP Labs QCX I built during the lockdown in 2020. It was an interesting fight with the Arduino ecosystem (hardware photo attached), but I did finally get there once I found the correct command-line incantation to get the new firmware to go to the radio rather than who knows where else. It should have been a job of only an hour or so, but it took me most of a weekend.... Finally, after a rush of blood to the head one evening, I've been trying to get some LoRa APRS kit working. The general approach involves subverting cheap Chinese "Meshtastic" boards, and again getting firmware into them is a major part of the challenge. I have a tracker working, I think, but as there's no LoRa iGate in the vicinity I'll need to set one up myself. That step's awaiting bits but should be up one way or another before the end of the week unless the firmware proves even more of a challenge than the tracker's was.

73, Rick M0LEP

VHF NFD 2024

Well, that was interesting!

The NESCG entry in VHF NFD this year took place on the weekend of 6th/7th July and the usual site on Warlingham Ridge was used, with thanks to Nick Fuller at Warren Barn Farm. We were teased by both the Met Office and the weather itself….. Despite optimistic forecasts of the weather at the start of the previous week, these gradually deteriorated in the days leading up to VHF NFD. And during the event itself, particularly on the Sunday, the weather chopped and changed between very heavy rain and bouts of sunshine - with heavy wind thrown in.

We were very short of people this year as a number of regulars including two of the usual stalwarts (Peter G3ZPB and Ray G4FFY) were unable to take part. However we did have full or part time attendance from nine members This may sound ample but to run three stations it really isn't! Many thanks to all the attendees, David G0PAR, Denis G0OLX, Quin G3WRR, Steve G4FYF, Alun G4WGE, Gareth G4XAT, Peter G7PWV, John G8MNY and Phil Mead – on his first ever visit to a Field Day site.

Nevertheless, the three stations (mastage, antennas and tents) had all been erected and gear put in place (if not then ready to go) on the Friday and we went home feeling tired but satisfied. The setup was as follows:

- **6m** – G3WRR/P, 6 element Yagi (courtesy of David G0PAR) driven by an Elecraft K3
- **2m –** G4WGE/P, 2m big Yagi (elements not counted by your scribe) driven by K3 plus transverter.
- **70cm –** G3SRC/P, 28 element loop Yagi driven by IC9700.
- **4m –** G3WRR/P. The 6m Yagi was (intentionally…) dropped on Sunday morning and replaced by an 8 element Yagi, (again courtesy of G0PAR).

Arrival on Saturday morning presented a dismal picture – a seriously wet site and the 6m tent partially collapsed (see picture below) with the gear inside worryingly damp. But nil desperandum: everything was got ready by start time (1400 UTC). Due to the shortage of operators who can do computer logging it had been decided to use paper logging throughout. This decision was not universally approved but deemed necessary (by G3WRR anyway) as there simply weren't enough folks available to allow for computer-logging-able people to log for non-computer-logging-able operators. All went reasonably well until an hour or two into the event, when the 2m station failed owing to a defective changeover relay that could not be fixed on site. The 2m team then shut up shop in disgust, but Alun G4WGE turned up on Sunday morning with a fairly elderly IC736 (10W only, but it did the biz). As a result, instead of doing our usual Restricted Section entry, we chose to enter the Mix and Match section (which allows stations to enter different sections on each band) – and it may well be that that played out in our favour because of the way the scoring works. (Please don't ask…).

Overall, the weather was pretty desperate – my own memory is that in 55+ years of doing VHF NFD there was only one worse year, in the early 80s on Dartmoor. I have a picture somewhere of Harry G3SBV standing in a tent holding a brolly over me as I operated – must look that out some time.

But all things, good and otherwise, come to an end and finally all the gear was dismantled and taken back to our individual bases despite some damage to the 2m beam due to excessive gravity assist while taking it down. However, that is not the end of the story as it is necessary to dry everything out before packing it away. One of the pictures below shows the 70cm tent hanging up in the garden at WRR Towers to dry. The gear was also powered up and left to dry out and all

seems to have survived wit the exception of a 12V PSU that emitted smoke and stopped working. This bears out G3RZP's contention that all components have smoke built into them during their manufacture, and when it comes out they cease to operate…..

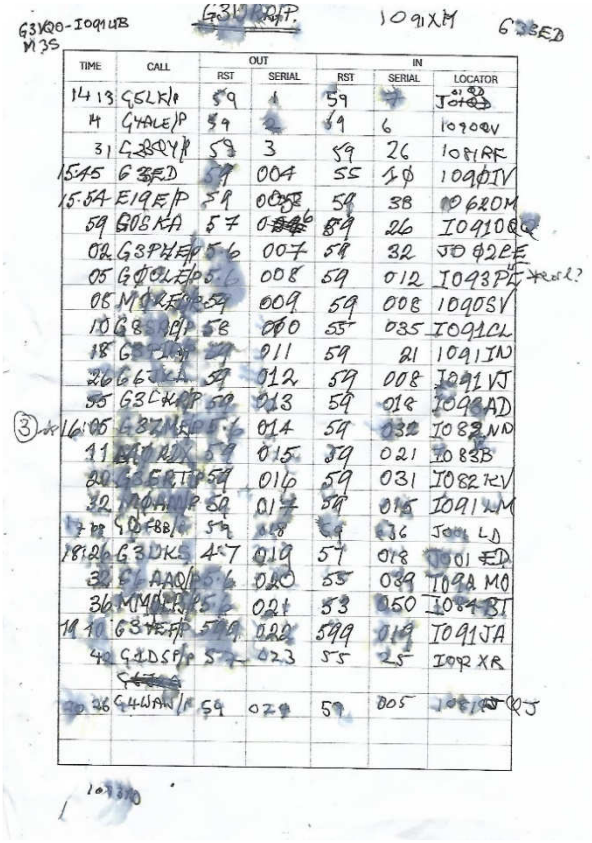
The results have not yet been formally issued, but our per band results were pretty poor, although our overall result was significantly better, putting us just above the halfway point.
We really have to consider whether with the current level of resourcing, activity and results it is realistic to continue taking part in VHF NFD at least in the current form. But that's not today's decision and here are some pictures from the weekend….

70cm STATION UNDER LOWERING SKY

COLLAPSED 6m/4m TENT SATURDAY a.m.

HIGH QUALITY REPAIR TO 6m / 4m TENT

2m – G4WGE (op) & G0OLX - notice that Alun Is logging manually…



TIME	CALL	OUT RST	OUT SERIAL	IN RST	IN SERIAL	IN LOCATOR
1413	G5LK/P	59	1	59		JO[illegible]
14	G4ALE/P	59	2	59	6	IO90QV
31	G[illegible]/P	59	3	59	26	IO81AK
1545	G3ED	59	004	55	10	IO90IV
1554	EI9E/P	59	005	59	38	IO62OM
59	G0BKA	57	006	59	26	IO91OQ
02	G3PHE/P	56	007	59	32	JO02EE
05	G[illegible]/P	56	008	59	012	IO93PL
05	M[illegible]/P	59	009	59	008	IO90SV
10	G8[illegible]/P	58	010	55	035	IO91CL
18	G8[illegible]/P	59	011	59	21	IO91IN
26	G6[illegible]	59	012	59	008	IO91VJ
55	G3[illegible]/P	59	013	59	018	IO90AD
1605	G3[illegible]/P	56	014	59	032	IO82ND
11	[illegible]	59	015	59	021	IO83BB
20	G3E[illegible]	59	016	59	031	IO82KV
32	M[illegible]/P	59	017	59	015	IO91WM
1700	G[illegible]/P	59	018	59	36	JO01LD
1826	G3UKS	47	019	57	018	IO91ED
32	G[illegible]/P	56	020	55	039	IO91AM
36	M[illegible]/P	55	021	53	050	IO81BT
1110	G3[illegible]/P	59	022	599	019	IO91JA
42	G4DSP/P	57	023	55	25	IO92XR
[illegible]						
2036	G4WAN/P	59	024	59	005	IO81[illegible]QJ

6m LOG AFTER WATER TREATMENT

70cm – G8MNY (left) & G7PWV (right)

AT WRR TOWERS - DRYING OUT POST EVENT

NOT ACTUALLY VHF NFD – NICE WEATHER ON ISLE OF WIGHT THREE WEEKENDS LATER FOR IOTA!

73, Quin G3WRR

SRCC LEAGUE TABLE – JUNE 2024

Four entries were received for the June League Table, the same number, and entrants, as in May. G3WRR moves down from 2nd in May to 4th this month, with G4FYF and M0LEP moving up one place to 2nd and 3rd.

ENTRANT	WORKED DXCC / SQUARE	WORKED SRCC MEMBER	WORKED IN CONTEST	POINTS THIS MONTH
G4FFY	108		49	265
G4FYF	34	1		70
M0LEP	6	1		14
G3WRR	3		3	9

The following notes come from the entrants…

G4FFY: *Missed the 70cm UKAC and FT8 contests but did enter the 144MHz UKAC and FT8 contests. My HF working was only in the Jun FT4 Contest. Was able to operate during some of the 6m Sporadic-E season which boosted my score ….. DXCC's worked is maintained at 161.*

G4FYF: *90% contacts on 10 and 6 meters this month. Interesting time wrt propagation conditions. Was interested to see what I might work during the RSGB 50 MHz contest June 15/16. The Saturday, band was very quiet. Sunday the band opened to near/mid/far Europe. Half size G5RV, 100W, 2:1 SWR at best on those bands, good fun!*

M0LEP: *Just the usual Monday morning chats with John on 80 metres and a handful of SOTA chases this time.*

G3WRR: *Another minimalist entry - this time in the RSGB 6m CW Contest, using HF inverted L!*

There is no change in the annual listing since last month.

ENTRANT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
G4FFY	114	223	89	123	157	265							971
G4FYF	28	40	68	38	30	70							274
M0CGF			100	86									186
G3WRR	63	18	42		45								177
G3ZPB	69	83											152
M0LEP	14	22	20	46	22	14							138

There is little to add to recent monthly reports, with the SFI continuing to be volatile on a day-by-day basis resulting in variable conditions on the upper HF bands, which are further influenced by the volatility of the A & K indices. But isn't it that variability itself what makes the hobby interesting?

73, Quin G3WRR SRCC Leaguemeister

SRCC NETS

The following is a list of structured nets on which members of SRCC meet regularly. They are sometimes joined by members of other local clubs, who are always made most welcome. The net is not usually led by a nominated controller, but stations normally transmit cyclically in the chronological order in which they sign in. If any member wishes further occasions and frequencies to be added to the table, please let me know at g.g.collier@btinternet.com.

BAND/FREQUENCY/MODE	DAY OF WEEK	START TIME (clock)
160m / 1905 kHz / LSB	Sunday	9.30 am
80m / 3710 kHz (+/- QRM) LSB	Monday	9.00 am
10m / 28.078 MHz / JS8	Wednesday	10.00 am
6m / 51.55 MHz / FM	Tuesday	8.00 pm
4m / 70.30 MHz / FM	Thursday	8.00 pm
2m / 144.6125 MHz / Digital Voice	Friday	7.30 pm
2m / 145.35 MHz / FM	Friday	8.00 pm

* The Friday night Digital Voice net usually starts with D-star.
In addition to the regular Club Nets, several members monitor the local repeater channels, particularly GB3XP (145.6875MHz 82.5Hz CTCSS FM).

THAT'S ALL FOLKS…..

Thanks, as usual for all the inputs. As this is the holiday season, let me just wish you all a good time away…or at home if you are having a staycation instead.

See you next month.

73, Quin G3WRR
Secretary and Newsletter Editor