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The RNARS NEWSLETTER

Royal Naval Amateur Radio Society

MICK PUTTICK 1935 – 2022

G3LIK RNARS 004

RNARS FOUNDER MEMBER

ROYAL NAVY Amateur Radio Society

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MEMBERSHIP MATTERS

Joe Kirk G3ZDF

Recent changes in postal requirements have meant that all Newsletters posted overseas must have a customs declaration on which I have to include my name and address. I also added a Return Address label on the last issue for UK members. Newsletters to the following members have been returned to me and in each case either I do not have an email address or telephone number, or my emails have gone unanswered.

Membership No.	Callsign	First Name	Surname
0364	G3YLR	Ron	BLAKE
0486	G3AQB	Bill	STEPHENSON
0957	LA0BM	Ben	DRURY
1673	VA3ICC	Ian	Coombe
1984	G6CNK	Roland	Freshwater
2531	G2CHI	Bill	BAILEY
2550	GW4VEK	Dennis	EVANS
3139	G0FQT	Ray	EVANS
4458	OH1SR	Rainer	Skog

I would be grateful if any member can provide me with further information about any of the members listed above.

Membership Statistics

TypeOfMembership	Current	Free	Life	Suspended	Under25	Total
Affiliate	15	5	0	0	0	20
Associate	128	1	10	3	0	142
Corporate	326	3	58	6	3	396
Family	5	0	0	0	0	5
Honorary	1	1	0	0	0	2
TOTAL	475	10	68	9	3	564

MEMBERSHIP MATTERS

Welcome! To our new members

Membership Changes

New Members		
Tim Cooper	2E0EGZ	5152
Colin Foley	G0XCF	5153
John Stevenson	MW7WJS	5154
Re-joiners		
Alison Meras	SWL	0827
Changes		
Resigned		
Sid Will	GM4SID	1629
Bert Jacobs	ON4CBM	4334
Christiane Van Elst	ON4CBI	4637
Silent Keys		
Barry Osbourne (former member)	G0MPJ	3288
John English	G0OVI	3231
Mick Puttick	G3LIK	0004
Fred Parsonage (former member)	VK6PF	0481
Awards		
Stephen Small – 50 years continuous membership	G4HJE	0592

Joe G3ZDF

RNARS-Newsletter - THE Royal Naval Amateur Radio Society's MEMBERS JOURNAL

Editorial: David Firth, M0SLL
Distribution: Joe Kirk, G3ZDF
Proof readers: Joe Kirk, G3ZDF, Mike Moore, M6POY
Envelope Stuffers: HQ Shack members / Joe Kirk

Publishing dates and deadlines

Spring: 22nd March, Summer: 22nd June, Autumn: 22nd September, Winter: 22nd of December. Our deadline is usually 3 weeks beforehand. Contributions for the Newsletter are preferred in A5 page sized Word format set with narrow margins all round and with header and footer, using Arial 10pt text, and is a colour document printed on white matt paper inside a gloss cover, converted to a PDF document for printing. Please ensure that your images are sharply focussed. Please send your contributions to the RNARS Newsletter editor via email to M0SLL@mail.com. Personal items sent by post cannot be returned unless accompanied by a SAE.

The RNARS Newsletter is published by the Royal Naval Amateur Radio Society as its official journal to all members of the Society. The expression of views within this newsletter do not necessarily represent the views of the RNARS. The RNARS is affiliated to the RSGB.

MEMBERSHIP MATTERS – SUBSCRIPTIONS

Joe Kirk G3ZDF

PLEASE CHECK THAT YOUR SUBS ARRIVE ON TIME ON OR BEFORE THE FIRST OF APRIL EVERY YEAR.

Subscriptions can be made via **PayPal** through the RNARS website. Click on the *How to Join* page: **http://www.rnars.org.uk/Renew.html**

Overseas members: Subscriptions via PayPal is preferred, see above for details.

Newsletter by e-mail: If you want to receive email Newsletters contact the Membership Secretary for details making sure you include your email address.

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GDPR/A: Your details will be held on the society's database by the Membership Secretary. The committee requires your permission with regards to the release of your personal information held on the database to be used only by the Society.

The RNARS is grateful to Phil MØVSE and Wayne G6NGV Taylor of **Shine Systems** for hosting our web site free of charge:

If you are 25 years of age or under then you are exempt from paying subs.

NATIONAL HAMFEST CHANGE OF DATE TO Friday 14th 15th October

CHAIRMAN'S CHAT

David Firth
Chair-RNARS@mail.com

We are sad to report that Mick Puttick one of our founder members crossed over the bar on the morning of April 20th aged 86. Mick whose membership number 004 was of a vintage and calibre that will be missed, had achieved 86 turns round the capstan. Having begun his service as a Boy tel and left as a CRS after a long naval career. He remained a dedicated 'Sparker' becoming well known on a global scale among fellow operators. Our President, Commodore Paul Sutermeister has kindly written of his memories of working with Mick over many years, and one of his very long-standing friends has penned a summary of Mick's life which gives us an indication of just how dedicated Mick was to the world of radio. Farewell shipmate, may you have fair winds and following seas on your journey to the golden shore. Our thoughts and prayers are with his family and close friends. He will be greatly missed. With so many tributes coming in and with so many pictures of Mick, he was in fact one of our greatest ambassadors on the airwaves.

At this time of our celebrations of our Queen's Platinum Jubilee it is worth mentioning that a fair number of radio emporia have been advertising special jubilee deals. If you have been tempted by any of these then why not give us your thoughts on your latest enthusiasm in radio, be they rigs or twigs.

I was recently reminded that cutting corners is just not worth it. Huge signal spikes in the receiver indicating HF sources not too distant are tempting targets -and I am not talking about Ivan's taxi service out of Moscow, or Alberto from Turin DXing to the dark side of the moon. More like Nigel in central Eire, or Art' in Eastbourne. They were all deaf to my CQs! Out came the reference SWR and power meter to reveal a high SWR of 3.5 straight through to the aerial -the ATU had gulled me into thinking that I had a perfect match. I had forgotten to connect a counterpoise -how could I forget!? Just as well I took the aerials down before the storm.

For those who have wondered about J operators and their apparently mysterious working environment there is an article in this edition that attempts to lift the lid off their secretive existence especially, for those who want to know how to decode what is going on despite their complicated undercover disguises…

Best Wishes to everyone

David

OBITURY

Mick Puttick • G3LIK • RNARS 004

1935 - 2022

It's rare to find someone who dedicated his life to communications in the way Mick did after being introduced to radio at school. It would take him to many parts of the world and continue with him throughout both his career and home life. He won hundreds of awards for operation in amateur radio, particularly in the use of Morse. Amongst other things, he was a keen golf player and regularly played at Furzeley Golf Club, Denmead, quite often walking the two miles there and back from his home. Mick suffered for many years with diabetes but maintained a strict control over it and despite this, led a normal life. Ironically, he liked a glass of rum, particularly Pussers which is a commercial copy of the original Navy Rum which was served to Royal Navy personnel until its withdrawal in 1970. We drank many a tot together over the years.

Michael Puttick was born in Wisborough Green, Sussex in 1935. He first became interested in radio when the headmaster of his local school started a radio club for senior pupils. This led to Mick building a battery-operated radio and he listened to the shortwave bands and amateur radio in particular.

He joined the Royal Navy in May 1950 at HMS St Vincent in Gosport before transferring to the boys training establishment at HMS Ganges in Shotley, Suffolk where he commenced signals training. This was followed by service on board HMS Cleopatra in the Mediterranean Fleet, based in Malta. Whilst there he was hospitalised at the RN Hospital at Bighi, the first time he had ever been to hospital. He later transferred to the aircraft carrier HMS Glory and saw him in active service in the Korean War. On return to the U.K, he spent time at Chatham followed by service in South Africa where he was stationed at the naval base at Simon's Town. During this period, he became interested in cricket and became a keen player. He later represented the Royal Navy at cricket and was often flown to play at places like Gibraltar where he also served.

On his return to the UK in 1956, he was persuaded to take out his Amateur Radio licence and was issued with the callsign G3LIK. He has always concentrated on transmitting in Morse, (known as CW), a skill he had learned in the Royal Navy but later on, and for many years, he did run the SSB net (voice radio) for the Royal Naval Amateur Radio Society (RNARS) on Sundays. Mick was a founder member of the RNARS.

MICK PUTTICK G3LIK

He continued naval service at Portland on the frigate HMS Grafton before being drafted to Malta again and to the Commcen at HMS Phoenicia. Unfortunately, due to restrictions at his billet on Manoel Island in Malta, he was unable to operate his own amateur radio station, so he visited many of the local amateurs on the island of Malta. He returned to the UK and joined the signal school at HMS Mercury where he was an instructor. It was there in 1960 that Mick was a founder member of the RNARS with the membership number 4, which has members throughout the world even today.

In 1959 he married Doreen and they later had two daughters Gaynor and Caroline. After Gaynor was born, he was drafted to the aircraft carrier HMS Centaur which was involved in operation Vantage to support the newly independent state of Kuwait against territorial claims by its neighbour, Iraq. Later HMS Centaur assisted in the Kenya flood disaster in 1961. Within two years, he was back in HMS Mercury again. He became secretary of the RNARS in 1964 his first of many official posts in the Society.

He was drafted to Royal Naval wireless station at Kranji in Singapore with the family and it was there that his son Michael was born.

His last ship service was aboard HMS Scylla followed by a spell in the RN Recruitment Service based in Holborn, London. Whilst based in London, he lived in Ilford and commuted to his home in Cowplain, near Portsmouth. He was later drafted to Portsmouth Dockyard, still in the careers service, from where he finished his 45 years in the Royal Navy in 1995. His career had seen him promoted from Boy Telegraphist through to Communications Chief at the rank of Chief Petty Officer. He was a prominent member of the Royal Naval Communication Chiefs' Association (RNCCA).

Sadly, his wife Doreen died in 1999. Mick is succeeded by his three children and his second wife Allison.
RIP Mick.

Bill Mahoney, G3TZM / 9H1BX

IN REMEMBRANCE

Michele Carlone, Bergamo - Italy
I knew that Mick - **G3LIK** is now SK. He was also an INORC member, and he was a very good friend of us all. We had so many QSO's. We are so sad. Please tell to the family we're praying for them.
God bless you.
73 de Michele ***IZ2FME - MM0FME - N2FME*** EuCW Chairman.

Paddy Wilkes
One of my mentors in my early days at HMS Mercury and then later as shack manager in HMS Collingwood … Rest easy silent key

Paul Joosten
Mick 'drafted' me into the RNARS many moons ago. RIP my friend...-.-
Paul PA5UL #3302

David Corney
Sad news indeed. **Mick** and Mike Matthews were some of the first people I met when I wandered into the radio shack at HMS Mercury.
Condolences to his family.

Tony Nicholls
RIP to a great man who served the Society faithfully. He made me feel so welcome when I joined the Horndean club I shall always remember his kindness.

Tom Chirhart
Mick and Mike were the first faces I met when I was accepted as a new member in 1976. Met at the Rising Sun PUB just prior at the AGM in 76' I went in my US Navy uniform and was treated like an honored guest by all. RIP SPARKS we have the watch...
K4NCG RNARS 1007.

Bob New
So sad to hear I knew both when I joined at Mercury my condolences

Mike Gloistein
Very sad news

Dave Cannon
R I P Mick

John Taylor
Very sorry to hear that. Mick was a good man

IN REMEMBRANCE

Dave Cannon
Mick recruited me into the RNARS back in the 70s. VP8OR in them days G4IWQ 986 now

Bill Owens
R.I.P. Mick...

Harald Joormann
I am very sorry - RIP Mick

Steen Tom Jespersgaard
R.I.P Mick rnars 2153 OZ1ANE

Ian Templeton
Very sad to hear this news. R.I.P. Mick

Alan Judge
Rest in Peace Mike

Donald Napier
R.I.P. Mick. Donald G1LEV #4877.

Adrian Mori
Sad news indeed and a great loss to the society - R.I.P. Mick

Roger Mansell Williams
RIP Mick, he always made you so welcome on the the RNARS net

Tony Magon
RIP Mick - T0ny VK2IC 548

Tony Magon
Was in the RNZN and was in UK picking up Canterbury/ZMCR in 71/72 - First met Mick when he was RS on Scylla - Was signed up by Mike/G3JFF when in Mercury doing PCT late 71 early 72

Nikolaus August
My sympathy to his family. Mick brought me in contact with RNARS in 1980, visted us at home in Austria which was followed by some visits from us in England. Mick was a crucial player in the 1980s to encourage partnership between RNARS, INORC and MF world wide. Thank you for all de OE8NIK

IN REMEMBRANCE

Christian Schröder
Indeed, sad news! RIP! Christian, #4589

Steve Lacey
Sad news, will be much missed, made me very welcome when I first joined RNARS.

Phil Manning
RIP Mick G3LIK

Jack Cocquyt
RIP de ON7CK

Michael Meras
R.I.P. Mick G3LIK
Joins Chief Smoke and others.
Shock, that another RNARS legend has gone QRT

Robert Mannion
Very sad news! I knew Mick during my own RN days and when I joined thr Navy News Editorial staff he made sure he found a reason to visit me at my office in HMS Nelson and we kept closely in contact. When I was invited to take over as Editor of Practical Wireless magazine Mick was one of the first to phone me. As we were both Diabetics we had much in common and as far as I can remember, he was one of the first senior RN staff to continue in service while on an insulin regime…paving the way for others to follow. Always a gentleman he was at home and at ease with everyone from Admirals to lowly journalists like myself. RIP Mick…I'll miss you very much my friend. Rob G3XFD in Bournemouth.…

Alison Meras
RIP Mick. My sympathy to Alison, Gaynor, Caroline and Michael jnr and their families. Xx

Ed Ilott
Very sad to hear this news R.I.P of our friend James G4KWW RNARS 1937

Gareth Mollard
R.I.P. Mick from Gareth M0MOL #4754

Mike Moore
R. I. P Mick from Mike M6POY

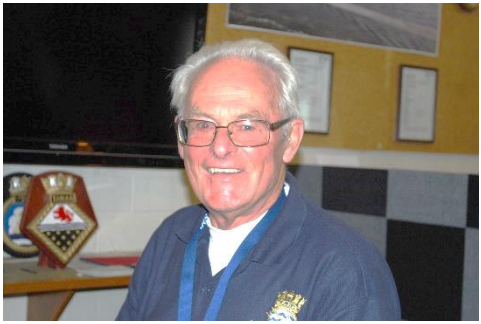
IN REMEMBRANCE

Klaus Klitzke
Mike, G3LIK ushered me into the club years ago. A great loss. I'm really sad.
RIP Mike

IN REMEMBRANCE

IN REMEMBRANCE

IN REMEMBRANCE



Mick 'The LIK' Puttick 1935 – 2022
G3LIK RNARS 004

Mick will always be remembered as a diligent man in his chosen field of radio communications. He was a full career signaller in the Royal Navy and an amateur radio operator, and he was simply the best, being well known for a good many years as a constant presence on the airwaves where his callsign is legendary and much sought after in many an operator's log. He was a quiet man and a survivor who overcame both triumph and disaster during his long life. His biggest gift to us over his long years of active membership has been the worldwide coverage of our organisation as an enthusiastic RNARS operator and representative. We will miss him.

On behalf of his friends and colleagues in the Society and on the committee with whom he has served for many years, we offer our sincerest condolences to Mick's family and close friends.

David Firth, Chairman, RNARS

IN REMEMBRANCE

President's Memories of Mick Puttick.

I was so saddened to hear of Mick Puttick's death and send my deepest sympathies to his family and I know that he will be sorely missed by the Members of this Society and all his other friends.

Mick and I go back to 1969/70 when I was doing the Long Signal Comm-unications Course at HMS MERCURY. The RNARS was in its infancy and the Fleet were only becoming aware of its existance. We were briefed that if equipment was available and the operational situation allowed, we should be sympathetic to any members of the RNARS onboard to use the equipment.
Later in 1991/93 when I was the Captain of HMS MERCURY and also the President of the RNARS and the Royal Naval Communication Chiefs Association (RNCCA) I had lots of dealings with Mick who was very involved with both. I think that he was also running the Sea Cadet Corps' stores in the Dockyard. He was retired then but did spend a lot of his time in MERCURY.

Before joining the Navy I had been a Sea Cadet in Wallasey Sea Cadet Unit in the Wirral and whilst I was at MERCURY I was asked by the then CO of the Unit if I would be the VIP for a Sea Cadet Passing Out Parade at the Unit and I accepted. On completion talking with the CO and the Unit Officers I asked if there was anything I could do to help. They asked if I could get some navigational charts for their training - which was no problem as MERCURY was also the Navigation School. They also asked if we had any spare mattresses for the Cadets when they were doing sleepovers at the Unit. As MERCURY was about to close down the mattresses should also not be a problem. My Supply Officer was very cagey about disposing of naval stores, but after I persuaded him that our used mattresses would never be returned to naval stores, but were more likely to be destroyed, he changed his mind. Mick as the SCC Stores Officer was brought into the plan and would get the charts and some mattresses up to Wallasey SCC Unit.

After MERCURY closed down I was appointed as the Captain of HMS EXCELLENT and shortly after joining, I received a telephone call from the CO of Wallasey SCC Unit saying thank you for the charts which were very much appreciated, BUT please could I turn off the supply of mattresses. The Unit had pussers lorries arriving on a frequent basis full of mattresses and they now had them coming out of their ears! The Supply Officer had arranged for ALL MERCURY's mattresses to be sent to the Unit at Wallasey and we had accommodation for some 800 personnel. Mick sorted it all out, thank goodness, and we have had a laugh about it on several occasions…

When I was invited to become your President again, years later, Mick was the Chairman, but sadly his health was failing and after a disastrous time on one of his cruises, Doug Hotchkiss relieved him as Chairman. Mick still maintained an active role in the Society running the Net Lists and producing fantastic prizes for the raffles which he ran at our AGMs.
He was delighted and proud to be made an Honorary Vice President of our Society in his retirement and it is difficult to realise that we will no longer have his cheerful and sage personality around. As I have said, he will be missed.

DIVERSE REPORTS -our members

90 YEAR OLD RNARS VETERAN KEN RANDALL RETIRES

Ken Randall reports on his visit to the Blackpool rally with the RNARS Stand

The NARSA Blackpool Rally 2022 took place on Sunday 24th April and I had booked the usual stand for RNARS. Now, because we had booked and paid for the 2019 Rally which was cancelled -because of the pandemic, the fees paid for that Rally have been carried over to pay for this year's rally, so no fees are due this time.

Just to let you know that as I now have no car due to medical reasons, I am looking for someone else to take charge of the stand equipment. There are a couple of RNARS members living locally who I shall ask. I was 90 in September and think it time to pass the gear on to someone a bit younger!

Stay safe 73 de Ken G3RFH RNARS 175

Thanks for your stalwart service, Ken and keeping the RNARS flag flying at NARSA. Just let us know who you pass the baton on to please so we can keep them informed.
73
Joe G3ZDF

50 YEARS MEMBERSHIP CERTIFICATE AWARD

Stephen G Small FCMI, G4HJE #0592 Lt Cdr (SCC) Royal Naval Reserve District Officer (West Kent) reached 50 years continuous membership of the RNARS on 1 April.

Steve says:

I will have achieved 50 years of membership on 1 April 2022, having joined the society in 1972 upon arrival at HMS Mercury as a baby communicator fresh out the box. CRS Wally Walker signed me up and attached is a copy of my membership certificate and you can just make out his signature, the sun has somewhat faded it over the years. At the time of joining, I spent much of my spare time in the shack at Mercury, that rather old and small building that housed the kit and just about everything else to do with the publication of the newsletter et al. I had the pleasure of learning from the late FCRS Mike Matthews G3JFF who was a frequent visitor to the shack as well.

Steve

RFA AUXILIARY MEMORIAL

Kevin Lamb G4BUW

Royal Fleet Auxiliary Memorial - Marchwood, Hampshire

Shortly after having moved to Marchwood in April, I visited the memorial which is next to Saint John the Apostle Church in the village centre. I thought this would be of interest to RNARS members and so took some pictures. Being a former Merchant Navy Radio & Electronics Officer, I particularly noticed the memorial inscription for ***Ronald Hoole***. The Marchwood Parish Council web site gives more information:

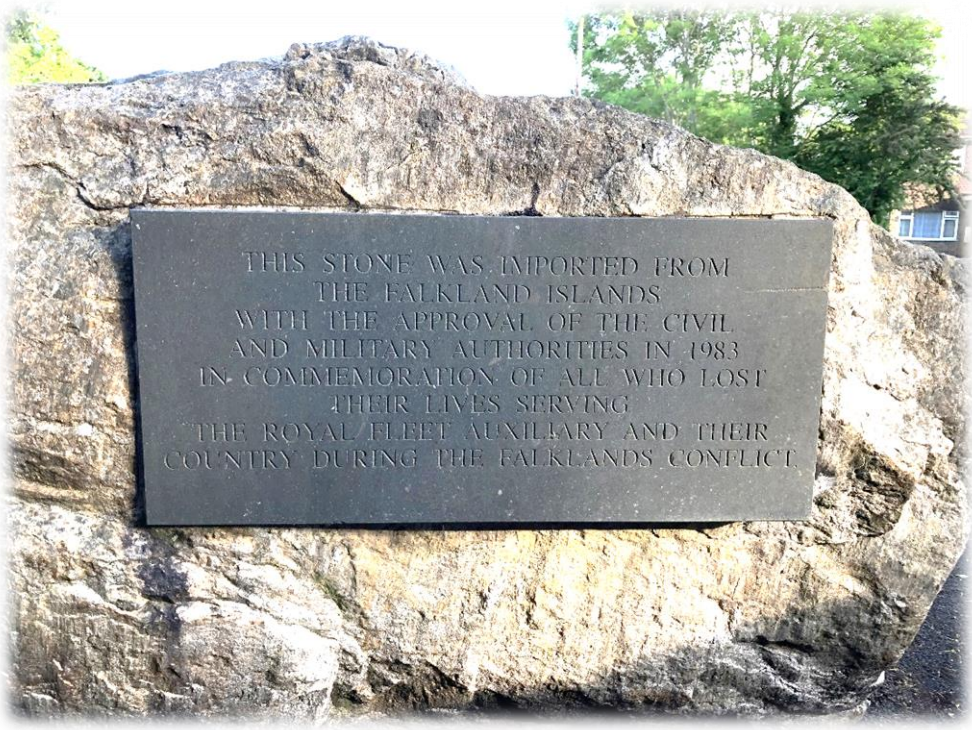
1st Radio Officer Ronald HOOLE
Service: Royal Fleet Auxiliary
Ship: SS Atlantic Conveyor
Date of death: 25th May 1982
Age at death: 38
Buried: At sea

The well-constructed memorial and its colourful garden are kept in good condition. There is a large piece of Falklands Island stone at the frontal area. My eyebrows raised at being reminded the conflict was 40 years ago; I had just left the MN and started my first shore-side job at the time.

Marchwood is on the opposite side of Southampton Water to Southampton. It has been a Military port for many years,

RFA AUXILIARY MEMORIAL

and I am, bit by bit, learning more of its history. The Royal Logistics Corps 17 Port and Maritime Regiment are based here. I am aware that two current Type 45 destroyers were berthed in the port at some point. When doing my Marine Radar Maintenance Certificate course in Southampton, I was told by a local guy that Marchwood was an RFA base. Maybe other RNARS members know more detail. If so, please drop a line to the Editor for the next issue.



Kev Lamb
G4BUW

OPEN DAY NOTICE

CALL FOR VOLUNTEERS

Open Day HMS Collingwood 2022 will be held this year on 2 July

IT'S NOT TOO LATE TO VOLUNTEER!

We will be looking for volunteers to run RNARS activities. Names please to:

Joe G3ZDF (g3zdf@btinternet.com or 07976 364623)

On the day Volunteers will need to be in HMS Collingwood by 08.30. Refreshments will be available in the Shack. We may also be able to provide some of Ian and Martin's famous bacon butties.

Joe G3ZDF

The origins of Royal Navy Field Gun lay in 1899, in the Second Boer War, and in particular the epic 119-day Siege of Ladysmith. As the British Army was besieged by Boer fighters in the garrison town of Ladysmith, Natal, the Royal Navy landed guns from HM Ships Terrible and Powerful to help in the relief of the siege. Special carriages and mountings for these guns had been improvised by Percy Scott, before the Naval Brigade manhandled six field guns each weighing nearly half a metric tonne over rough terrain to assist their opposite numbers of the British Army.

The gallant defenders were helped enormously by the arrival at the last minute, of Captain the Hon Hedworth Lambton of the Naval Brigade with his 280 Blue-Jackets, four 12 pounders and two 4.7 inch guns. After the siege of Ladysmith was finally lifted on 28 Feb 1900, Her Majesty Queen Victoria I sent a telegram: 'Pray express to the Naval Brigade my deep appreciation of the valuable services they have rendered with their guns''. Displays of this magnificent feat began in London that year.

RPC – NEWBURY RALLY

Newbury and District Amateur Radio Society
https://www.nadars.org.uk/rally.asp

Carl McGowan of the Newbury & District Amateur Radio Club has extended an invitation to the RNARS to attend the Newbury Radio Rally on Sunday 26th June which we have duly taken up for the occasion.

The NADARS Radio Rally has taken place annually since 1987, with the exception of the last two years when we reluctantly had to cancel due to the Covid pandemic. This year the Newbury Radio Rally is back and we have plans to make it the best one yet.

The Newbury Radio Rally attracts visitors from far and wide and participating would be a great opportunity for RNARS to demonstrate and inform your fascinating aspect of our hobby.

RNARS would be given space at our rally **free of charge**. A suitable position would be allocated, and a special entry ticket provided to ensure early site entry without charge.

Above is a web link to our Radio Rally page. If you have not been to a Newbury Radio Rally previously, you will learn that it takes place at the Newbury Showground, located very close to the A34/M4 Junction.

It is an outdoor event so good planning would include a gazebo-type structure in case of inclement weather. There is no electricity provision, so any demonstrations need to be from your own battery supply.

Visitors £2.50 per person (children under 16 free, no other concessions) Free Parking

I would be most grateful if one of you could let me know if the RNARS would like to accept the offer of participating at our rally this year. Conversely, a 'not interested/unavailable' response is absolutely welcome too, so that I know not to unnecessarily message you again.

Kind regards and 73,
Carl McGowan G0KPE mcgowan.carl@gmail.com
Committee member of NADARS

THE WAVELL ROOM

The Constant Struggle At Sea: Attacking And Protecting Shipping

Commander Andrew Livsey Royal Navy

The large-scale land warfare and aerial bombardment we are currently seeing in Ukraine is fortunately rare, but the other part of the current war, attacks on shipping, is commonplace. This is because the importance of shipping makes it a valuable lever. Almost all international trade goes by sea, the global highway.

The chemical tanker MT Millennium Spirit burns in the Black Sea after an alleged missile attack by Russian forces

This article explains why and how navies act to protect or obstruct shipping every day. It starts with Ukraine and goes on to explain why similar actions take place even outside major conflict. It then imagines the use of obstructing shipping in a war with China or other states and finishes by asking why this perennial aspect of the global system is widely ignored.

Shipping and the Russo-Ukrainian war

Before the war, Ukraine moved over 70 percent of its exports by sea. This trade has entirely stopped, for Russian attacks on shipping in the Black Sea and the use of sea mines have cut Ukraine off from the oceans. When the EU suggested opening land routes in compensation, Ukraine's Deputy Economy Minister Taras Kachka replied that, "*we cannot ensure the same volume of exports as via seaports by other means of transportation … The only way to ensure proper reinstalment of exports is to unblock [the] seaports. This is the only solution.*"[1]

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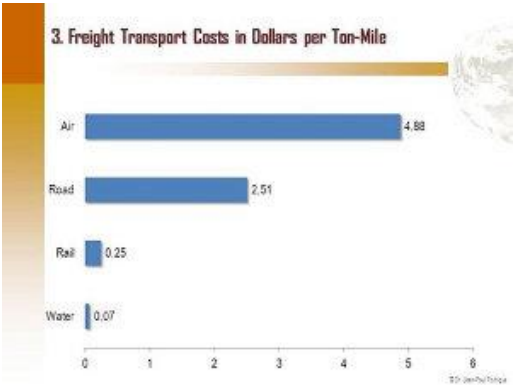
Kachka was saying the obvious truth. For almost any country, including Ukraine with its vast grain exports, roads are simply incapable of replacing the sea for almost all international trade. Even if they can, road or air transport is much more expensive than sea transport, destroying much or all of the profit to be made from trade. [2]



Example transport costs: going by water is much cheaper

We cannot predict the wider effects of the blockade of Ukraine. In the short term the war in Ukraine is a much more immediate issue. Wars, however, have a habit of going on longer than expected. We may find that the loss of exports and earnings for Ukraine are a problem. We may also find there are unwanted effects on the countries that used to receive Ukrainian grain, or by price rises more generally. Similar shifts helped to trigger the Arab Spring.

Navies act every day to obstruct or protect shipping

Ukraine is just one example of attacks on shipping and actions to protect it. From 2019-22 we saw:

-
  - Russia intermittently stopped traffic to Ukrainian ports on the Sea of Azov.
  - The Saudi led coalition is alleged to have imposed a partial blockade of Yemen. In response the Houthis are alleged to have mounted over twenty maritime attacks, including on vessels working for the world food programme or carrying oil.
  - Ships carrying weapons from North Korea to conflicts around the world were intercepted by Egypt and other countries, and Greece intercepted a vessel taking weapons to rebels in Libya.
  - Israel has been accused of having attacked over a dozen Iranian ships carrying oil and weapons to Lebanon and Syria,
  - while Iran has been accused of attacking Israeli ships. There is also an ongoing Israeli blockade of Gaza.

- There are over a hundred incidents of piracy in the South China Sea a year, as well as ongoing pirate and terrorist attacks in the Gulf of Guinea, the Celebes Sea and elsewhere, being partially countered by local forces.

Britain is not immune from this. In 2019 the failure of a Royal Navy frigate to be in two places at the same time let the Iranians capture the British flagged tanker Stena Imperio, after the Royal Marines seized the sanction busting Iranian tanker Adrian Darya-1 in Gibraltar.

The Royal Navy, here with a type 45 destroyer, protects merchant shipping passing through the Strait of Hormuz (picture: Royal Navy)

Obstructing shipping in a major war: China and Taiwan

Merchant shipping would be vital in any war over the Chinese wish to capture Taiwan. China imports over 70% of its oil and much of its food. Most of its necessary imports come through the Malacca strait between Malaysia and Indonesia. Action there to cut off Chinese shipping would have a serious and immediate effect. Hu Jintao, a former Chinese president, described this Chinese problem as the 'Malacca dilemma'.

The Chinese 'belt and road' initiative, costing perhaps $8 trillion, is in large part an effort to solve the Malacca dilemma by building railways across Central Asia to ports such as Gwadar in Pakistan, which are outside the South China sea. The creation of a Chinese naval base in Djibouti, with a jetty large enough for an aircraft carrier, is part of this scheme, aiming to provide protection for shipping in the Indian Ocean. The importance of sea power is forcing the Chinese to spend lots of money they could use elsewhere. Looking at it a different way, the expansion in Chinese oil storage capacity is as important an indicator of their readiness to invade Taiwan as is their construction of landing craft.

Another possible model for action against shipping in conflict, including against countries other than China, is the Iran-Iraq war in the 1980s in which both sides tried to destroy the other's economy by attacking its shipping.

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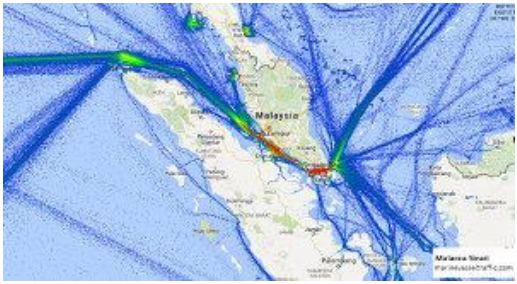
Ports can also be attacked; the Russian landing to capture the Georgian port of Poti in 2014, attacks in Libya by different groups in 2016 and 2019, and the two alleged Israeli attacks on Latakia in Syria in 2021.



Malacca strait shipping density map, showing the main shipping routes (marine vessel traffic)

Why is the obstruction or protection of shipping often ignored?
Why are these interceptions of shipping so little known? Perhaps there is an element of sea blindness. Ports have moved out of the centres of our seaside cities and we now fly to troubled areas or on holiday rather than going by sea. As civilians we no longer regularly see the ships that make the global economy work, and which move the weapons and supplies needed for wars (including for the UK when we were fighting in land-locked Afghanistan). Naval thinkers might also take some of the blame for not explaining the issue clearly. In particular the Second World War Battle of the Atlantic is too often used as an example. There are many useful points one can draw from that campaign, but to the uninitiated it can seem that we are fixating on something eight decades old.

The final reason that the struggle over shipping is so ignored may be precisely the reason why it happens so often. The sea is largely unclaimed so events can take place there without violating the territory of states. Attacks at sea are also largely out of sight of the public. This means that states and others can put pressure on each other at sea below the level of war and with limited attention. The sea is vital in war. It is also the ultimate arena for deniable conflict.
About the author Related Posts

May 4, 2022

Commander Andrew Livsey Royal Navy
Commander Andrew Livsey is currently the Royal Navy's Hudson Fellow with the Changing Character of War programme at Oxford University. He is a surface warfare officer who has served mainly in frigates, on most of the world's oceans. He has also been in charge of improving the Royal Navy's Principal Warfare Officer course and received the Sir Michael Howard Prize for best MA in Defence Studies at the Advanced Command and Staff Course in 2016-17.

THE WAVELL ROOM

Footnotes

1. https://www.politico.eu/article/green-corridor-west-not-save-ukraine-trade/
2. https://www.shippo.co.uk/faqs/sea-or-air-freight-what-s-for-me/
3. Useful Fiction – Fragmented Future
   next post
   Fighting From Cities: The British Army after Ukraine
   Related posts
   The Soft Power Army of the 2020's: An Alternative Perspective
   Over-Spending or Under-Thinking? The Real Crisis at the Ministry of Defence
   In Defence of Crow Culture

RALLIES & EVENTS 2022

RadCom

25 Jun – **GI-QRP Convention**

Tandragee Golf Club
11 Markethill Road
Tandragee
Craigavon BT62 2ER

Ample parking and disabled access. Doors open at 9am. Presentations start at 10am. There will be lectures/seminars, a Buildathon, Special Interest Groups, talk-in and trade stands. A prize draw/raffle will take place. Catering including a licensed bar will be available. Convention. The GI-QRP Convention is being held in association with the GQRP Club. Contact: Philip MI0MSO, 0784 902 5760, r8.giqrp@gmail.com.

26 Jun – **Newbury Radio Rally**

Newbury Showground
next to M4 J13, RG18 9QZ

Opens 9am (8am for sellers). Phill, G6EES, 0777 150 4738, rally@nadars.org.uk [www.nadars.org.uk/rally.asp]

3 Jul – **Cornish RAC Rally**

Penair School
St Clement, Truro
Cornwall TR1 1TN

Doors open 10am, £2 admission, Bring & Buy, traders, local club stands, refreshments available on site and Disabled access. Contact Ken Tarry G0FIC 01209 821073 pendennis38@btinternet.com www.gx4crc.com

3 Jul – **Barford Norfolk Radio Rally**

More details nearer the time. www.norfolkamateurradio.org.

RALLIES & EVENTS 2022

17 Jul – **McMichael Amateur Radio Rally & Car Boot Sale**

Reading Rugby Club
just off the A4 at Sonning Sonning Lane (B4446)
east of Reading, Berkshire
RG4 6ST, NGR SU 753 747

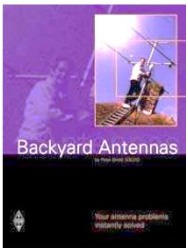
Doors open 9.30am, car boot set up from 8.30am. Large car boot area and *plenty of free parking for sellers / buyers*. Snack bar and licensed bar. Outdoor barbecue (weather permitting). Demonstrations and displays by special interest groups. Admission: £3 per person. Car boot sale: £10 per pitch, no booking required. Sorry but no dogs allowed, except for assistance dogs (site rule). https://mcmichaelrally.org.uk/

HMS Collingwood Open Day & Field Gun Competition
July 2nd 2022 Look out for the advert

AND VOLUNTEER TO HELP IN THE SHACK

Photos from the single transistor transmitter project on page 40:

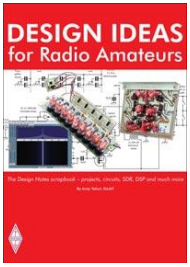
BOOKS CORNER



BACKYARD ANTENNAS

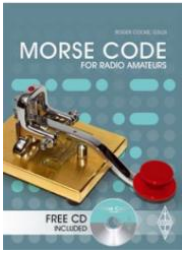
Peter Dodd Nov 12 2004

Antenna guru Peter Dodd explains how, by using a variety of simple techniques, to achieve very high performance from a compact antenna. RSGB has issued corrections and to the content. Visit the RSGB website

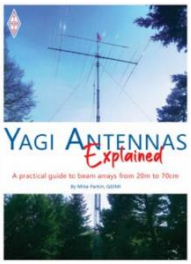


The Design Notes scrapbook – projects, circuits, SDR, DSP and much more -**By Andy Talbot, G4JNT**

If you want new amateur radio ideas, this book comes as highly recommended reading.



Morse Code for Radio Amateurs is the latest 10th edition of the Radio Society of Great Britain's (RSGB) book designed to show how to learn Morse code and get the maximum enjoyment from using it. This hugely popular title has been ***updated and revised from the 9th edition by Morse enthusiast Roger Cooke, G3LDI***



A practical guide to beam arrays from 20m to 70cm

By Mike Parkin, G0JMI

Her Majesty The Queen's Platinum Jubilee

> I continue to be inspired by the goodwill shown to me, and hope that the coming days will provide an opportunity to reflect on all that has been achieved during the last seventy years
>
> Her Majesty The Queen

Thank you to everyone who has been involved in convening communities, families, neighbours and friends to mark my Platinum Jubilee, in the United Kingdom and across the Commonwealth. I know that many happy memories will be created at these festive occasions.

I continue to be inspired by the goodwill shown to me, and hope that the coming days will provide an opportunity to reflect on all that has been achieved during the last seventy years, as we look to the future with confidence and enthusiasm.

ELIZABETH R.

THE j OPERATOR

Ed M0SLL

What is the j operator all about?

The only things that I knew about **j** as a boy, sculling around in the EMR onboard my first ship, were that it is the square root of minus one -Really! The second thing that had been stored away in the back of my brain was that it is impossible to find the square root of a minus number, but thereafter no one made the connection for me about its presence in electrical and electronic circuits, or its inescapable use in radio circuit analysis. I did however find out that the letter **j** was used because in the engineering world the letter i was already being used as a symbol for current as in i amps. Synonymous with the letter 'a' or 'A' which is just shorthand for the word amp or amps flowing in a circuit.

Decades later when faced with the reality of solving problems in electrical circuit theory I had to learn fast when it came to this entity – "*It's life Captain, but not as we know it*!" I am not going to delve into the depths of maths just to leave you stranded in the Q-continuum, dear reader. It does appear briefly or at least it did in previous editions of the training docket for the full licence but is not explained. As amateurs we come across the '**j**' operator usually when looking around for ways to build a homebrew aerial -and probably get switched off when we find this obscure symbol in antenna calculations. It is in fact a significant tool. Its salient features are as follows:

It is a tool to make maths work when normal algebra cannot get a result.

You do not need it for DC circuits because ohms law and others can be used for the likes of resistors (R), etc.

It is used in AC circuitry to determine current, voltage and impedance which are all dependant on the applied frequency. Therefore, we can see that it applies to reactive circuit components such as L and C.

Reactance creates a phase shift between voltage and current in AC circuits.

Phase shift means that the either the voltage phase leads the current phase, or indeed, the current phase leads the voltage phase, and it begins to get tiresome trying to figure out what is going on when both L and C behave in the opposite or negative sense.

Voltage and current peaks can either be reduced or damagingly elevated in certain circumstances (dampened or amplified).

Remember that in AC circuits v and i are in phase when applied to resistors, because resistors are non-reactive in AC circuits.

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Reactance X and Impedance Z
We need to tidy up one or two details such as what is reactance? and why is it connected to impedance?

Reactance X_L and X_C
Shall I compare these to a summer's day… more likely to a basic resistor. Resistors are so called because they resist (oppose) current flowing in a circuit depending on their value in ohms. In the early days of learning about the reactance of either an inductor of value L or of a capacitor of value C there can be some little confusion, because the reactances of L and C are each given a value in ohms as well, so what is going on?

Simply put; reactance X can be thought of as an identical property to resistance in that it opposes current flow, but unlike the pure resistance of a resistor which remains fixed, the reactance of L and C change with frequency, causing the ac peaks between v and i to occur at different times. We call this difference the phase shift and refer to it in degrees (see diagrams).

The Importance of Z and Triangles
Now when we find L, C with any resistance R in the circuit. It is a complex problem, but to fully understand what is going on we need to find the total result of **R**, **X_L and X_C** by calculating their ohmic values together to find the total impact on the L, C and R circuit. The basic equation is shown below:

$$\boldsymbol{Z = \sqrt{R^2 + (XL \sim Xc)^2}}$$

This is the complex part of the process because it is a square root. You might be able to see a similarity between this and old Pythagoras's theorem because it is ultimately derived from the geometry of a right-angled-triangle which is used to plot the three elements in a diagram known as the ***'Impedance Triangle.'*** Which ultimately leads us to the j operator. The ~ sign indicates the difference in the values of X_L and X_C that gives a positive result. That is to say, either **X_L - X_C** or **X_C - X_C**

The Trouble with AC
Unlike DC which only goes in one steady direction, AC goes in two directions: up and down from zero through to a positive maximum, back down to zero and down to a negative maximum before swinging back up again towards zero. It is this that creates the complex nature of AC waveforms; the constant changing of both current and voltage in positive and negative directions. **BUT we can solve** many problems associated with complex numbers by using geometry instead of complicated maths. This is where Uncle Pythagoras scores highly!

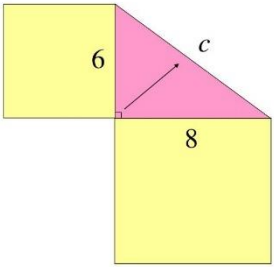
THE j OPERATOR

Given any right-angled triangle we can find the length of the longest side according to Pythagoras:

Calculate side c.

$$c^2 = a^2 + b^2$$
$$c^2 = 8^2 + 6^2$$
$$c^2 = 64 + 36$$
$$c^2 = 100$$
$$c = \sqrt{100}$$
$$c = 10$$

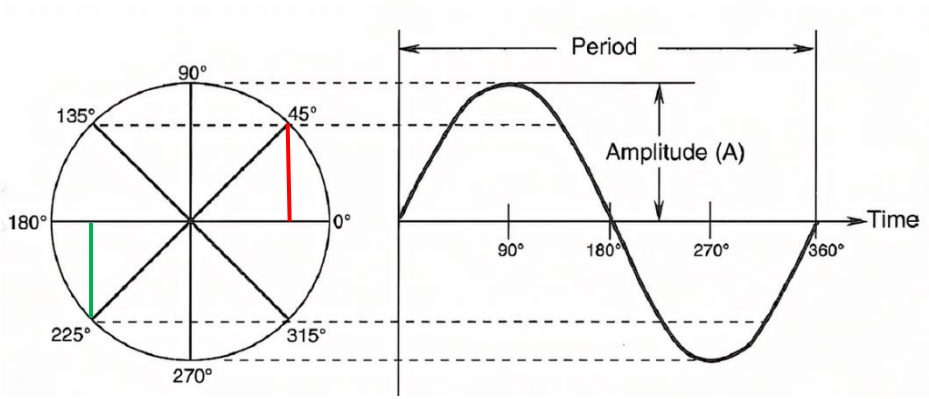
When calculating the hypotenuse, we add the area of the squares of the other two sides.



In the diagram of the triangle we can see that c is the longest side (the hypotenuse)

Pythagoras deduced that if we worked out the addition of the areas of the squares on the shorter sides, we could find the length of the longest side… True enough, just take the square root of that little sum and c = 10 as shown.

Is there a way we could avoid hard maths to make working out complex numbers simpler? You bet! By looking at the complex shape of a sinewave and looking at it in such a way that it is made up of many triangles…



Rotating a broomstick nailed at the centre of the diagram and free to move we can see the if the outer has a pencil attached to it, the outer end maps out a circle. Now imagine someone slowly dragging the paper from left to right as it rotates, and we obtain a sinewave shape which represents the same shape as an alternating current or voltage. Imagine 360 right-angle triangles, one for every degree of rotation between the broomstick and the horizontal axis of the diagram. That is why we can cut corners and use geometry like Pythagoras theorem to find out the amplitude -the vertical height of the diagonal above or below the horizontal line, and the size of the phase angle every time.

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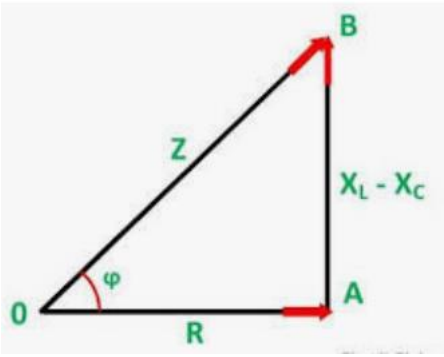
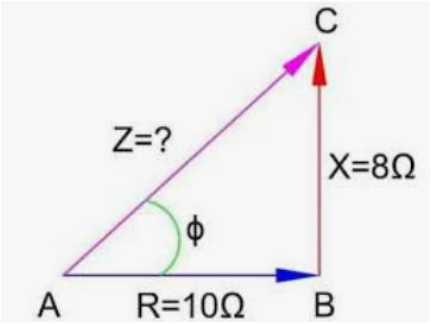


Here is the trick, if we can use right angle triangles to work out voltage and current, we can do the same with R, Xc and X_L to determine the impedance. Calculate X_L and Xc

By taking one such angle at an instant in time we can construct a triangle as shown here. The label 0 refers to the origin at the centre of the circle and the angle between the horizontal and the longest side is labelled to identify it.



In this next example we will examine the characteristics of an LCR circuit.

We have worked out that the combined reactance of L and C = 80Ω and the value of the resistance is 10 Ω

So by the theorem Z = $\sqrt{10^2 + 8^2}$

And thus Z = $\sqrt{100 \quad + 84}$

Z = 12.8 Ω

Now how do we find the phase shift? Answer, by using one of the trig identities normally used for such purposes.

Looking at the buttons on a scientific calculator you should be able to identify the following buttons: **sin**, **cos**, **tan**. These are the trig identities that we use when solving right-angle triangles -we will use tan because it needs the lengths of the shorter sides to calculate the angle.

$$\tan\phi = (X/R) = 8/10$$

but since this is a ratio, we have to find the phase angle, so we use the inverse tan: by using **shift tan^{-1}** (arctan on some calculators)

Hence: **shift tan^{-1} (8/10) = 38.66 degrees**

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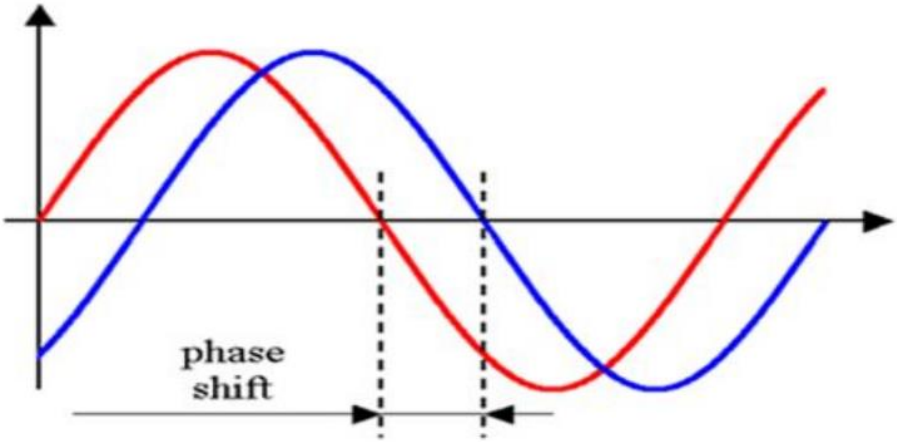

Figure 1 - Generalised form depicting phase shift

Here we can see that voltage and current are not in phase because they do not occur at the same time for coils and capacitors due to their impedances.

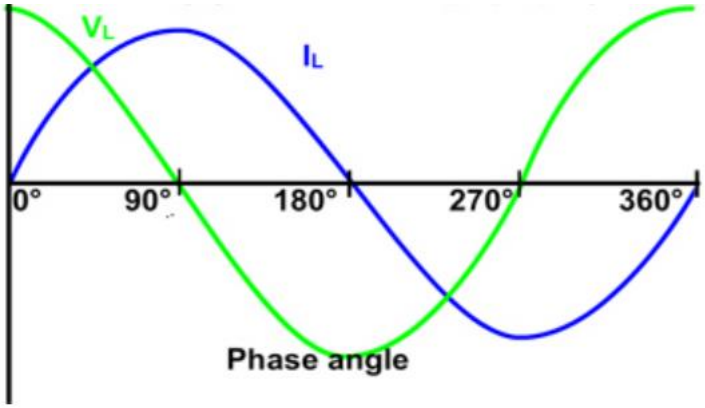

Figure 2 – An inductive Circuit Phase Shift Diagram

In figure 2 we begin to see specific details about the phase shift. Here we can see that the voltage leads the current by 90 degrees. Notably, we say the voltage is leading while the current is lagging behind the voltage.

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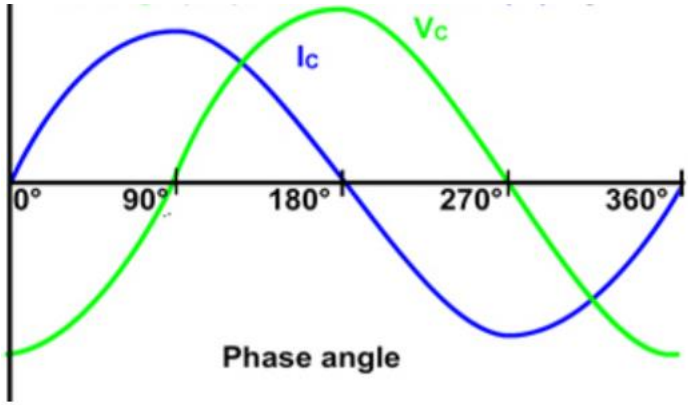

Figure 3 – A Capacitive Circuit Phase Shift Diagram

Here we see that the current is leading the voltage by 90 degrees. It is now the voltage that is lagging the current.
The phase shift affects the power in the circuit. We should note:

- The given waveform is called a sinusoid due to its shape
- For a constant frequency the phase shift 'angle' is steady
- When the frequency varies the phase shift 'angle' varies
- In a purely resistive circuit, there is no phase shift.

By looking at the phase diagrams we can see that when the current and voltage peaks occur at the same time (in phase) maximum power is attained, so we can deduce that when there is a phase difference the power will change instantaneously.

It this complex environment that makes a mockery of normal maths which might normally fail to help us work out the various issues associated with reactive circuits that may contain R, L and C all together.

What is needed is a way round the awkward situations where current and voltage pass through zero and into the negative zone under the X-axis of the graph. Remember that the equation for the impedance contains a square root:

e.g. $$\boldsymbol{Z = \sqrt{R^2 + (Xc)^2}}$$

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in a capacitive circuit, you should also know that you cannot find the square root of zero, because it produces infinity ∞:

$$\sqrt{0} = 0$$

You cannot find the square root of a negative number either, because it does not exist in the real world, because it produces no result.

$\sqrt{-4} = 0$ It produces an error for which there is no solution!

And this follows the rules of mathematics!

Hang on! Let's try a little subterfuge…How about this?

$\sqrt{-4} = \sqrt{-1 \text{ x } 4} = \sqrt{-1} \text{ x } \sqrt{4}$ split them up as shown.

This now gives us wider possibilities to move forward:

We cannot sort out the root of $\sqrt{-1}$ but we can work out $\sqrt{4}$

The interim result looks like this: $\sqrt{-1}$ x $\sqrt{4}$ = $\sqrt{-1}$ x 2

This looks messy and is messy to work with in calculations that may follow on. This is where engineers came up with the bright idea of a substitution - substitute $\sqrt{-1}$ with the letter **j** and see what we get:

$\sqrt{-1}$ x 2 = **j2** or if you like **2j**

As a result of this discovery, I adopted the format of putting **j** first and then came along the j20 brand which is quite a cool reminder.

Because of this we can now calculate the properties of Z and work out the instantaneous currents and voltages of those sinusoidal waveforms, and other things like the phase angles, power factor, and so on. We must be careful, because what this trick allows us to do is to mix real numbers with those that do not exist, called *imaginary numbers.* It is quite common to see this ***'complex number'*** notation appear on the screens of the more expensive aerial analysers that are available in the radio-electronic marketplace.

Complex number = (real number ± imaginary number)

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For example: 3 + j4 (7 – j6) 25 – j 9 + j9 and so on

Complex numbers can be manipulated by the rules of ordinary algebra, that is to say, you can add them, subtract them and multiply them, but there is a catch in the multiplication because of the presence of **j,** while you cannot divide them directly because it does not work -there's an extra trick called the ***'complex conjugate'*** that is used to sort it out. (Why? They're sort of joined at the hip…)

Subtraction (7 – j) – (4 + j3) = (3 -j4) where j is effectively 1j

Addition (1 + j4) + (5 – j2) = (6 +j2)

Multiplication (2 + j5) x (3 + j6) [multiplying 2 binomial equations]

= 6 + j12 + j15 + $j^2$30 = (21 + j12 + $\mathbf{j^2}$30) by collecting like terms

The sticking point here is **30$\mathbf{j^2}$** for which we have another trick… The square of j = $\sqrt{-1}$ x $\sqrt{-1}$ = -1 arithmetically, leaving us to deal with just -1. We now have 30 x -1 = -30 and our result is modified to read (24 + j27).

Subtraction using the complex conjugate to find the answer:

(5 + 3j) ÷ (2 + 5j)

The complex conjugate is derived from the dividing equation thus:

Divisor = (2 + 5J) then the complex conjugate = (2-5j)

Just change the sign in the middle and multiply top and bottom by this new equation:

$$\frac{(5+3j)\times(2-5j)}{(2+5j)\times(2-5j)} = \frac{25-19j}{29} = \frac{25}{29} - \frac{19}{29}\,j$$

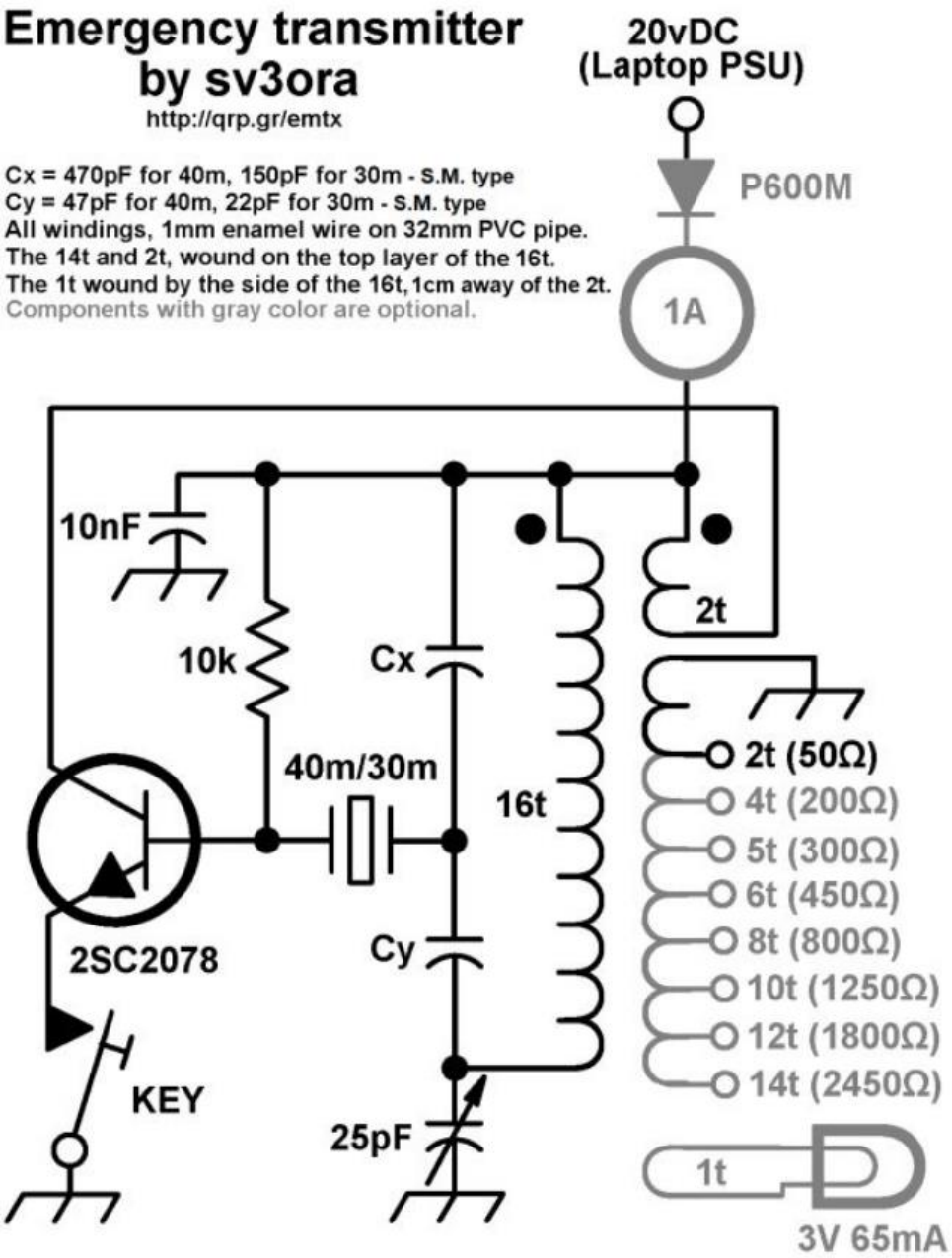
Some of you may notice that on the surface we are multiplying the original equation by 1. It is the multiplying process that says otherwise. A great result in the bottom line is that the j term is eliminated leaving a real number in the denominator.

I recommend JK Stroud, Engineering Maths 3rd edition which is full of tools for the radio amateur who wants to know more…

If you own a scientific calculator, you can put it into complex mode and test out the way of complex numbers and get a feel for how it works out…

QRP /EMERGENCY TRANSMITTER

SV3ORA



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Contact: *Joe Kirk G3ZDF*

UK	UTC	Frequency	Net	Control
Daily	0001-0400	145.725	Midnight Nutters	M0WRU
Sun	0800	3.667	SSB net (news: 0830)	**Glenn G0GBI**
	0930	**3.715**	**IOM Net**	**CLOSED**
	1030	7.068/3.748	RNARS North SSB net	M6LWO
	1100	7020	RNARS CW net	G4TNI
Mon-Sat	1030-1330	7.085	The Bubbly Rats Net	GX3WTP/G0GBI/ G0OKA/M0ZAE
Mon	1400	3.575	QRS CW Net	G0VCV
	1900	3.748 (Pri) 7.088 (sec)	N.W. SSB Net (News: 2000)	G0GBI
	1930	145.400 (S16)	RNARS Cornish Net (Falmouth / Lizard)	G4WKW
Tues	1600	7.068/3.740	Tuesday HQ Net	GB3RN
	1900	7.028/3.528	RNARS CW Net	G3RFH
Wed	1400	3.748	Stand Easy Net	M6LWO
	1700	TG 23527	Wednesday DMR Net	M0LIH
	1900	3.748	Wednesday Net	G0VIX
Thurs	1900	3.542	Scottish CW Net	???
	2000	145.575	RNARS Scottish 2m Net	GM0KTJ/P
change	2100 GMT	1.835	RNARS Top Band CW	G4KJD/G0CHV
Fri	1600	10.118	RNARS 30m CW Net	SM3AHM
Sat	0800	3.748	G0DLH Memorial Net	G0VIX

DX	GMT	Frequency	Net	Control
Sun	0800	7.015/30555	MARAC CW	PA3EBA/PI4MRC
	11:00	14.329	SSB - Les	VK2CPC*
	1430	14.329 ±QRM	RNARS DX	W1USN/GD0SFI/ GM7ESM
	1800	Echolink	Echolink	VE3OZN / K8BBT
	1900	**14.33**	**N American**	**W1USN**
Mon	0930	3.615	VK SSB	VK1RAN/VK2RAN
Wed	0118-0618	7.02	VKCW	VK4RAN
	0148-0648	10.118	VK CW	VK4RAN
	0800	3.62	ZL SSB	ZL1BSA
	0930	7.02	VK SSB	VK5RAN
	0945	7.09	VK SSB	VK1RAN/VK2RAN
Thur	1430	14.329 ±QRM	RNARS DX	W1USN/GD0SFI/ GM7ESM
Sat	0400	7.09	VK SSB	VK2CCV
	1330	7.02	VK CW	VK2CCV
	1400	7.09	VK SSB	VK2CCV
	1430	14.329 ±QRM	RNARS DX	W1USN/GD0SFI/ GM7ESM

RNARS SCENE OF ACTIVITY

FM	**145.40**								
CW	**1.824**	**3.52**	**7.02**	**10.118**	**14.052**	**18.087**	**21.052**	**24.897**	**28.052**
SSB	**1.965**	**3.66**	**3.74**	**7.088**	**14.294**	**14.335**	**18.15**	**21.36**	**28.94**

COMMODITIES PAGES

Mike Moore M6POY

Order Form is at the back

A variety of items are available from the RNARS storeroom with many of them being personalised if you wish.

Mugs, key rings,
Lanyards
&
Clothing

RNARS LogBooks
&
Mugs

Really nice RNARS Branded head gear - embroidered hats with your call sign on one or even both sides of your head.

COMMODITIES PAGES

Mike Moore M6POY

The ideal birthday or anniversary present...

RNARS Branded Gilet with your name and c/s Perhaps?

Comfy Fleece

Great Caps

COMMODITIES PAGES

Mike Moore M6POY

RNARS Badges
Fobs
&
Lanyards

RNARS Branded
Fleeces
&
Polo Shirts

Just the thing to keep you warm in the shack when it gets cool outside

Due to the current economic situation all pricing will be POA until further notice.

COMMODITIES PAGES

Mike Moore M6POY

Download order form - (http://www.rnars.org.uk/Commodities.html)

Item	Price
Gilet/body warmer w/ embroidered RNARS logo, Name and callsign. Taped seams. Waterproof & windproof, Double zip for easier fastening. Sizes S to 4XL Colour: Black	£ TBA
Navy cotton/polyester polo shirt w/ embroidered RNARS logo, Name and callsign. Sizes: S to XXXL Colour: Navy only	£ TBA
Sweatshirt, embroidered with the new RNARS logo, your name and callsign. Colour: Navy only Sizes: S to XXXL	£ TBA
Fleece jacket embroidered with RNARS logo, name and callsign. Colour: Navy only Sizes: S to XXXL	£ TBA
NEW! **White long-sleeved shirt** with RNARS logo & your callsign on the pocket	£ TBA
Baseball cap with RNARS Logo	£ TBA
-with your callsign on one side	£ TBA
-with your callsign on both sides	£ TBA
Baseball hat -plain	£ TBA
Gold blazer badge with new RNARS logo (p&p £2)	£ TBA
Lapel badge w/ new RNARS logo (p&p £1.00)	£ TBA
RNARS Tie	£ TBA
Lapel badge w/ new RNARS logo (p&p £1.00)	£ TBA
RNARS Log Book	£ TBA
Lanyard with RNARS & your callsign	£ TBA
Mug with RNARS logo & your callsign	£ TBA

Post & Packing is at UK rates:

Small to medium items £7.00

Large to Extra Large £8.50

Outside UK +£10.00

Payment with order please

Please complete the Order Form and include your RNARS Membership Number. Note that some orders can take up to 3 weeks. If you wish to pay by PayPal the RNARS PayPal account email address is **rnars.treas@gmail.com**

You can download a copy of the order form our website at:

Size in inches:

Small 36-38 Medium 38-40 Large 40-42

Extra Large 42-44 2 Extra Large 44-46 3 Extra Large 46-48

4 Extra Large 48-50

COMMODITIES PAGES

Mike Moore M6POY

PLEASE write clearly and use block CAPITALS

Photocopies of this form are accepted

Call-sign | RNARS No: _____|_____

Name: _____

Address: _____

_____

Post Code: _____

Telephone: _____

Email: _____

Advisable to check before ordering as to availability in your size

Item Description	Size	Colour	Qty	Price	P&P	Sub Total
Total Payment £ Enclose cheque payable to: ***Royal Naval Amateur Radio Society***						

Overseas members, please add £5 to cover additional postage.

Send orders to:

Please allow fourteen days for delivery and while these prices are correct when going to press, prices do vary and are subject to change

RAFARS & RSARS NETS

RAFARS	Time	Freq	Control
Daily	1100 A 1830 A	3.71 3.71	GØSYF G3HWQ
Monday	1900 A	3.7	G3PSG
Tuesday	0730 A 1400 A 1900 A	14.27 7.015 3.567	G4IYC
Wednesday	1500 Z 1530 Z	14.29 21.29	?
Thursday	1830 Z	14.17	ZC4RAF
Friday	0730 A	14.055	CW Net
Sunday	0900 Z	5.403	?
1st Monday of the month	1000 A	3.71	?
RSARS Nets	**Time**	**Freq**	**Control**
Monday - Friday	1000 A	7.17	GW3KJW
Monday	1830 A	3.585	GM3KHH (RTTY)
Tuesday	1400 A	7.17	MØOIC
	1600 Z	14.18	G4BXQ
Wednesday	0600 Z	14.143	Various
	1030 Z	3.615	?
	1830 A	3.565	GM3KHH
	2030 A	1.946	2EØBDS
Thursday	1400 A	7.17	GØRGB
	1800 A	3.743	G6NHY
Friday	1830 A	3.583	GM3KHH (PSK31)
	1830 A	3.565	High speed CW
	2000 Z	14.055	CW
Saturday	0600 Z	14.143	SSB
Sunday	1000 A	3.565	G3JRY (Slow speed CW)
	1100 A	7.17	GW4XKE
	1100 A	3.745	GM4FOZ
Joint Service Net	**Time**	**Freq**	**Control**
Sunday	0900 A	5.4035	G3RAF
Tuesday	1900 A	5.4035	G3RAF
Daily 24/7	DMR-TG23527	DMR TG23527	

RNARS: UK Military & Veterans net on DMR TG23527 Wednesdays at 17:00 local

FIELD GUN BURGESS TROPHY AT HMS SULTAN