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RadioUser

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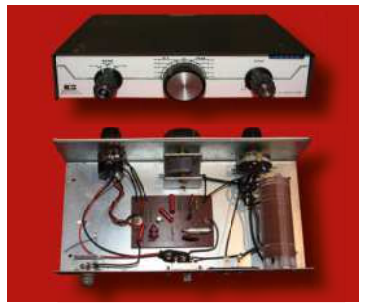
TECSUN PL-990x
The First UK review



Radio User REVIEW

WORLD RADIO

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Their design, function and correct use explained



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In his valedictory regular column for this magazine, Chris Rolinson accentuates the increasing use of network radio technology for the essential work of volunteer emergency groups in the UK.



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Radio Diversity and a Maritime Flavour

Hello and welcome to the November issue of *RadioUser*. As we move into autumn – even so we are not moving anywhere else very much – the nights get longer, bringing exciting new possibilities of radio reception, appreciation and experimentation. In this issue, we get ready for the seasonal changes, as we cover a particularly wide range of radio topics this month.

Two different word band radios, reflecting two very different philosophies and ways of operation have come up for review this month. On the one hand, fingertips at the ready, there is the long-awaited new offering from Tecsun, the *Tecsun PL-990x* multi-band receiver, with inbuilt Media Player and Bluetooth. Scott Caldwell has an initial test and will go into more detail next month. On the other hand, I have had a chance to road-test another new radio from Italy. This is the *Palomar CityRadio*, bringing you cool looks and a wealth of global stations at the press of an (interchangeable) magnetic button. Is this radio-cum-design-object more than an innovative Bluetooth speaker? Make up your own mind.

Our other features, and some of our columns, offer a somewhat salty flavour this month. The maritime wave starts with Robert Connolly's look at the background to Non-Directional Beacons and continues with Robert's column on Maritime 'Black-Box' recorders and EPIRBS. In addition, Scott Caldwell raises a sensitive issue; should the wreck of the Titanic be penetrated, in order to recover historic radio equipment, or left well alone?

In our regular sections this month, you can learn more about airband jargon used on the bands, and the impact of radio music formats on communities of listeners.

Tim Kirby demonstrates how easy it is to receive comms from the International Space Station (ISS), with simple aerials, SDRs and scanners easily avail-



ble. In other columns, we cover the role of women in radio, now and in the future, small-scale DAB licences, the life of the TV pioneer Paul Nipkov, developments in the area of DRM radios, and the use of antenna preselectors, also known as antenna tuning units, or antenna matching units. Chris Rolinson delivers his valedictory column, for now, on network radio, looking at its use by voluntary emergency workers and helpers.

Moreover, if you are after listening and Dxing tips, look no further than Chrissy Brand's international radio recommendations, an update on the British DX Club (BDXC) and Stig Hartvig Nielsen's list private European short wave stations. The latter have certainly kept me busy here, especially at weekends, and transatlantic medium wave Dxing has been a joy too.

I hope that you will enjoy this issue of *RadioUser*, in both print and digital formats.

Do not forget to take a look at our *Radio Enthusiast* companion website, for more on new products, events and up-to-the-minute trends in the diverse world of radio.

Stay in touch and, as always, stay safe.

Georg Wiessala

Editor, *Radio User Magazine*
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What's New

Have you got something new to tell our readers about? If so, then drop a line to wiessala@hotmail.com



Innovation with Raspberry Pi

Listening to radio from distant countries used to take a shortwave rig, but thanks to the Internet we can now pull in streams from all over the globe from the comfort of our own desktop. With a few clicks, you can switch between your local news station and the latest in pop trends from Casablanca. But as convenient

as online streaming might be, some folks still yearn for the traditional radio experience. For those people, the Raspberry Pi World Radio by Abraham Martinez Gracia might be the solution. Built into the body of a 1960s Invicta radio, this Internet radio uses a very unique interface. Rather than just picking from a list of channels,

you use the knobs on the front to pan and zoom around a map of the world. Streaming channels are represented by bubbles located within their country of origin, so you will have to 'travel' there to listen in.

(SOURCE: Hackaday)

<https://tinyurl.com/y6a45ev2>

Radio News

RADIO AND MENTAL HEALTH: Bauer Media and *Where's Your Head At?* have partnered with mental health charity *Chasing the Stigma* to launch #PledgeKindness. The campaign encourages people to pledge to do something kind for someone else, aiming to spread happiness across the country, foster communication and human contact, and improve people's mental health.

To support the cause, Absolute Radio will take out the final ad-break every hour between 10 am-4 pm on 9th October and replace it with an instrumental song to encourage listeners to take time to think about the power of words, their mental health and how they can help the people around them. Other Bauer stations including Magic Radio and Hits Radio will be publishing and airing call outs and kindness stories too. The campaign has been supported by stars such as Little Mix, Olly Murs, James Bay and Laura Whitmore. The campaign aims to collect 10,000 pledges by *World Mental Health Day* on Saturday

10th October. Abby Carvosso, Group Managing Director Bauer Media Advertising said, "*At Bauer Media, we have been proactively campaigning for mental health awareness with Where's Your Head At? since 2018 and believe that it is even more important and relevant now than ever with the pandemic. We want to be able to drive awareness, actively support people who are suffering and explore the issues and topics that matter most to our audiences and customers – so we're very proud to be partnering with Chasing the Stigma and bring all our brands together.*"

(SOURCE: Radio / National Press, *Radio World*)

For the latest news and product reviews, visit www.radioenthusiast.co.uk



ICOM UK RMS-IP LTE/PoC Radio Dispatcher

RMS-IP radio dispatcher has been developed in-house at Icom UK. It is a 'virtual radio', which can be configured to work with Icom's range of LTE/PoC handheld and mobile radios. The voice dispatcher can be used to make calls on talk groups or can make individual calls to specific units as well as send 24-character long text messages to the physical radios. RMS-IP is not confined to licensing keys so any user can access the portal anywhere in the world with their secure log in on any computer, laptop, tablet and smartphone device. A major feature of RMS-IP is its voice recording function that allows you to make a recording of voice traffic

on a system if required. Recordings can be made on an individual radio basis or a number of radios on the customer's system. The recordings can be played back on a per-radio basis by an entry in the database directly from the web browser. The operator can filter recordings by date and time, call type etc, and save the recording on to the client PC for later use. RMS-IP supports a range of emergency alert functions incorporated into Icom's LTE/PoC range including *Man Down Lone Worker* and *Panic Button* features.

(SOURCE: Ian Lockyer: ian@icomuk.co.uk)

<https://tinyurl.com/y3o572p6>

<https://www.icomuk.co.uk>

Radio News

ARRL ANNUAL REPORT: The ARRL has released its Annual Report 2019. It shows that the number of new amateur radio licenses issued in 2019 fell again. The number of new amateur radio licenses fell by 1% in 2017, 2% in 2018 and 5% in 2019, suggesting an accelerating trend. ARRL President Rick Roderick, K5UR, called 2019 "an exciting year for ARRL," with several new initiatives moving through planning and development for rollout in 2020. He said, "Two of them – On the Air magazine and the ARRL Online Learning Center – signify steps taken toward the 'new generation of hams' that I've been talking about in the past few Annual Reports. They've been asking ARRL for help finding their way in amateur radio for so long, wanting to know everything from how to serve their communities, how to integrate the ham radio hobby and service with all the demands that modern life makes upon them, and even simply

how to determine which parts of ham radio interest them." Roderick also cited the development in 2019 of the ARRL Online Learning Center – an array of online courses that will at first serve new hams and later expand to courses and materials for hams at all skill levels. The Online Learning Center is expected to launch in early 2021.

(SOURCE: ICQ Amateur/Colin Butler)

<http://www.arrl.org/annual-reports>

AUTOMATIC PODCASTS: A new service for radio stations has been launched allowing the automatic creation of podcasts and cloud-based recording of output. HippyNet's AutoPod, which records a radio station's stream for a pre-set amount of days, can make downloads available based on a schedule created by the user. It also has an RSS feed, 'embeddable' widgets, and the option to upload audio manually. It offers a similar facility to the BBC's Listen Again service on BBC Sounds. HippyNet has been specialising in IP services for the radio industry for 10 years.

<https://tinyurl.com/y3eayt5z>



TITLES FOR 2021: Jörg Klingenfuss has been in touch announcing his publications for 2021. He emphasised the currently more than 500 Kiwi-SDRs which are available at this URL:

<https://tinyurl.com/y6rmrfhm>

Most of these cover the entire HF spectrum. Consequently, monitoring and decoding of professional HF digital data stations - from exotic locations all over the world - is more convenient than ever before. Hundreds of screenshots will be published in the 2021 frequency guide books. We've passed the solar cycle minimum in 2019, and propagation conditions are improving fast: for instance, on 5th October 2020, Jörg received the low-power transmitter of aircraft ET-AVB, an Ethiopian Airlines A350 at an altitude of 41,000 feet en route from Addis to Dubai, sending automatic position reports every few minutes on 21955 kHz. HF radio continues to be fascinating! The team at Klingenfuss is now working on its 2021 products: *The 2021/2022 Guide to Utility Radio Stations*, *The 2021 Shortwave Frequency Guide*, *The 2021 Super Frequency List on CD* and *The 2021 Frequency Database for the Perseus LF-HF Software-Defined Receiver*. These books are scheduled to be published on 10 December 2020 and will be fully reviewed in *RadioUser* soon after.

<https://www.klingenfuss.org/homepage.htm>

EVERYONE'S HOME BUT WITH NO RADIOS (AMPLIFIMEDIA): An insightful article on the future of radio after the COVID-19 pandemic concludes, "The pandemic may have put a fork in the notion of linear-only content for commercial radio and hopefully forces broadcasters to get moving with more rigour. New platforms are what people are using and fresh content is what they seek". You can read the full article on the *amplifyMEDIA* website, which can be retrieved at this URL:

<https://tinyurl.com/y3rdb8a8>

THE OCTOBER ISSUE: CQ-DATV has arrived and is ready for viewing and downloading. The latest issue contains articles on *Grass Valley Mixer Conversions (Part 21)*, *5.8 GHz, 2 Watt AMPLIFIER Reliability Issues & Fixes*, *A Portable Test DVB-T Receiver with Monitor and Power Supply*, and *The A to B of Early Video Mixer Technology*.

<https://issuu.com/cq-datv/docs/cq-datv88>

<https://cq-datv.mobi/88.php>

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BLETCHLEY GIRLS

Germany is winning the war, England's being bombed into oblivion... and MI6 is depending on a small team of girls working in a freezing hut in the English countryside to break Germany's most secret code.

Inside Bletchley Park, Dilly Knox enlists a small team of girls to crack some of the enemy's toughest codes. Whilst Margaret Rock is a trained statistician, the newest recruit is Mavis Lever, 19 years old and a student of German romantic poetry. A friendship develops between this unlikely pair as pressure mounts on them to decipher intercepts which will impact the course of the war. It's a phenomenal task - "We must know what Hitler knows" - and they work against the clock - and the odds. But it's not all night shifts and Enigma machines; there are dances, pranks, and even a touch of romance...

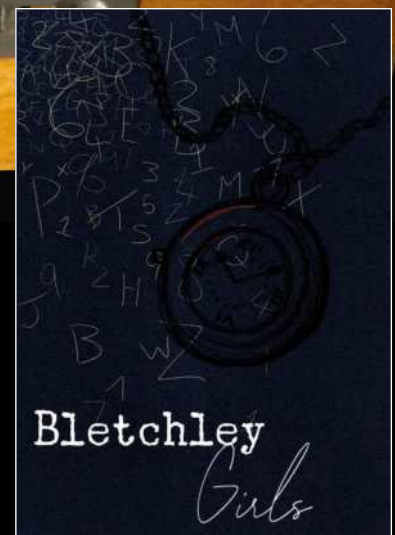
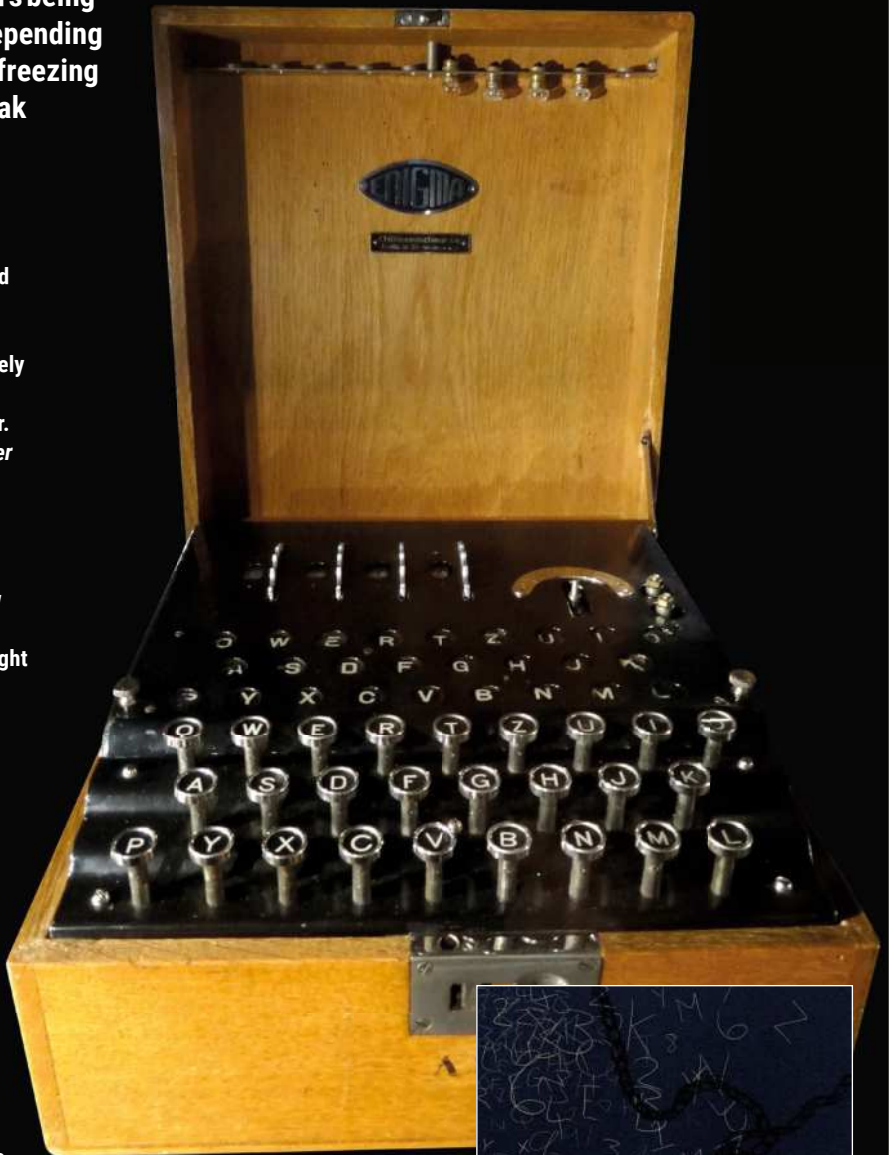
Jenny Wren Productions presents this brand new radio drama based on the untold true story of two female codebreakers at Bletchley Park at the height of World War II.

Bletchley Girls is a stage play that was due to be performed in May and June 2020 at a number of Gloucestershire venues. The coronavirus pandemic put a stop to that for now, and so the creative team adapted the play for the radio. The finished product will be broadcast as part of the Gloucester History Festival on 17, 18 and 19 September. The radio play will be distributed through the Hospital Broadcast Association and the Community Radio Network, including both Winchcombe and Corinium radio stations in Cirencester. It will also be available on Jenny Wren Productions' YouTube channel

www.jennywrenproductions.co.uk

Codebreaking workshops by Bletchley Park that are aligned with the play will be available by video to Gloucestershire school children aged 11-14 around the History Festival.

Director Jenny Wicks said "It's certainly been a tricky few months for us, but we've risen to the challenge and have enjoyed adapting the play and learning some new skills. This is the first radio play any of the team have made, but we're very lucky to have the help of Boom Sound Studios, who work on major TV productions and films such as *The Crown* and *Call the Midwife*. It's exciting to be able to bring our creation to audiences both in Gloucestershire, as we usually do, but also far and wide."



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Services & Products from ML&S

Icom Japan thought it would be a great idea to employ a ¼" screw thread mount on the bottom surface of their new IC-705 QRP radio. This enables all manor or brackets and stands to be attached. ML&S have found one that not only matches the IC-705 but is lightweight and can be attached to the radio in seconds. The ends of the feet are rubber so it stays put once the transceiver is mounted. Because it is a mini-tripod design, there is a button on the side to adjust the radio body to any angle required. The 705-Tripod Mount is available from stock at £22.95 For more info see:

www.HamRadio.co.uk/705Tripod

With the Yaesu FT-8900 no longer made, TyT thought they'd jump into the void and produce a nicely-styled compact Quadband transceiver covering 10, 6 and 2m, as well as 70cm. It has up to 50W output (40W on 70cm) on all bands:

www.HamRadio.co.uk/TH9800

From October 2020, ML&S can offer a total of 60 months warranty covering parts & labour for Icom's IC-705 portable QRP transceiver. The IC-705 is supplied with twenty-four months warranty.

For an additional charge, a further three years is added to the end of the usual factory guarantee. "Many of our customers have been requesting 5-year warranty on the IC-705 especially as it's aimed at out and about field-work using portable antennas. As the rigs get more compact and complex, so do the repair



costs in the event of a break-down outside the limited warranty period", said Dan Lynch, Operations Director and eldest son of Martin Lynch the founder of ML&S; "It's as simple as ticking the checkbox on our website when purchasing the IC-705 and we think it represents excellent value considering just one trip to an approved workshop outside the 2-year guarantee could cost more than the one-off charge of the extended warranty". Martin Lynch was the first UK dealer to reveal a full production version of Icom's new 5W transportable back in July when he did an unboxing video via his "Something for the Weekend" series on the **MLandS.tv YouTube channel**. Finally available in September, many hundreds of Icom's new baby QRP radios have already found homes within the UK market alone and looks to be the Japanese manufacturers most innovative model since the launch of the IC-706 back in the early 1990s.

www.HamRadio.co.uk/IC705



New from Moonraker

The Moonraker MHR-100 VHF Marine Transceiver has large keys and easy to grip body for smooth operation. It includes 200 programmable channels with quick channel selection and falling water flash alarm. The radio is waterproof to 1 metre for 30 minutes. The unit costs £69.95.

<https://www.moonraker.eu>
sales@moonraker.eu
chris@moonraker.eu

[Don't miss out on Robert Connolly's review of this radio in next month's RadioUser - Ed.]

Enter our competitions at www.radioenthusiast.co.uk/competitions

Radio News

BOX OFFICERADIO FOR THEATRE

AFICIONADOS: A new radio station dedicated to music exclusively from the stage and screen has launched online. *Box Office Radio* is playing songs from Broadway and the West End with soundtracks from the greatest films ever made. The new service is managed by founder Josh Haywood. Josh explained: "Box Office Radio is about two key factors, the music and the people. As well as appealing to fans of stage and screen, we are working with industry groups and connecting with the passionate people that make up the UK's 2,000 plus amateur theatre groups and operatic societies. Our goal is to be the number one choice for this genre and be loved by theatre professionals and musical fans alike. We are now exploring opportunities to collaborate with individuals, industry-related organisations and other businesses and media outlets. With a line-up of professional, knowledgeable and likeable presenters, we promise to be always engaging and accessible as well as playing the best variety of music from Stage & Screen [...]."

The UK has seen two musicals radio services come and go over the last few years – *Encore Radio*, operated by UKRD on a few DAB multiplexes before being bought by Bauer, and *Matinee Radio*, an online service from Manchester.

(SOURCE: *Radio Today*)

<https://tinyurl.com/y47tcbmj>

EARTH'S MAGNETIC DENT: Earth's magnetic field acts like a protective shield around the planet, repelling and trapping charged particles from the Sun. However, over South America and the southern Atlantic Ocean, an unusually weak spot in the field – called the 'South Atlantic Anomaly', or 'SAA' – allows these particles to dip closer to the surface than normal. This may affect radio propagation:

(SOURCE: Bob Houlston G4PVB)

<https://tinyurl.com/y48cv9wg>

FEMALE SPIES OF THE SOE: The 'Baker Street Irregulars', as they came to be known, were trained in sabotage, small arms, radio and telegraph communication and unarmed combat. SOE agents were also required to be fluent in the language of the nation in which they would be inserted so they could fit into the society seamlessly. Portable communication devices were of utmost importance as radio and telegraph communication ensured the French resistance (and SOE agents) were not cut off from the outside world. Radio operators had to stay mobile, often carrying their radio equipment



on their backs as they moved from safe house to safe house. Their survival depended on their ability to transmit messages rapidly and move quickly. Odette Sansom Hallows was interrogated and tortured by the Gestapo and imprisoned in Ravensbrück Concentration Camp. The 1950 film *Odette* is based on her war exploits. Read the full article here:

(SOURCE: *Historic UK*, via Bob Houlston)

<https://tinyurl.com/y6cbrwhv>

WOMAN'S HOUR: BBC Radio 5 Live presenter Emma Barnett will be the main host of BBC Radio 4's *Woman's Hour* from January 2021, replacing Jane Garvey. Emma will present the programme from Monday to Thursday each week, leaving her mid-morning 5 Live show at the end of the year. She'll also continue in her role at *Newsnight*. Jane continues to present *Woman's Hour* until the end of the year. Between October and December, some other presenters will guest host in place of Jenni Murray whose last programme is on 1 October. Emma presented *Woman's Hour* alongside Jane Garvey and Jenni Murray during the 2017 and 2019 General Elections and interviewed Jeremy Corbyn and Jo Swinson during that time. She anchored the overnight BBC Radio 2019 election programme with James Naughtie that was simulcast across Radio 4 and 5 Live. She was the first chair of the *Woman's Hour* Power List which celebrated the 100 most powerful women in Britain and has been a regular guest presenter of the programme since 2013. Emma Barnett said: "I can't wait to get to know the many listeners of *Woman's Hour* a lot, lot better. What adventures we are going to have together – all starting in the year that this BBC institution, the radio mother-ship, turns 75. I have a long love of *Woman's Hour* and live radio and know that this is a very special and rare opportunity." Controller of Radio 4, Mohit

Backpack for the IC-705

The Icom LC-192 is a new dedicated backpack, specifically designed for the Icom IC-705. This multi-function backpack has many features including space for an external antenna and cables as well as sufficient area to store your IC-705 and all your accessories. The LC-192 is the ideal accessory to compliment your IC-705. Everything has been thought of with the design of the LC-192. On the top of the backpack is a separate compartment for the radio to sit securely in. Below that is a larger compartment to allow you to store accessories including, power supply, batteries, cables, etc.. An adjustable divider keeps everything well in order and secure. The backpack is well padded with protective cushioning to protect the IC-705 and accessories from knocks. The back of the LC-192 is equipped with breathable padding (as well as the carrying straps) so that the LC-192 can be carried comfortably on longer and outings. A light plastic mounting plate is attached to the side, which allows the use of small portable antennas. There are also holes in the backpack to run cables. Alternatively, with the optional VS-3 Bluetooth headset you can use your IC-705 wirelessly. The LC-192 backpack is available from authorised Icom Amateur radio dealers!

(SOURCE: ICOM UK)

<https://tinyurl.com/y2uac6ln>

Bakaya, added: "I am delighted that Emma is joining *Woman's Hour*. She started her BBC broadcasting career on Radio 4 and has continued to be closely involved with the network in general, and *Woman's Hour* in particular, ever since. She brings a terrific combination of intellectual inquiry, robust journalism and curiosity about the human condition; I can't think of anyone better to carry on the important job of identifying and exploring the issues that matter most to women."

(SOURCE: *BBC, RadioToday, Guardian, eRADIO with Broadcast Bionics*)

<https://tinyurl.com/y4gwrlaq>

<https://tinyurl.com/y4bbwclsd>

LIGHTNING TRACKING: Short wave listeners will often hear thunderstorms as crackling RFI Radio Frequency Interference on the VLF radio bands but now we can see thunderstorms as they appear on a real-time map via the link below.

(SOURCE: *Blitzortung*; Bob Houlston).

www.blitzortung.org

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A Glossary of Aviation Jargon on Airband Radio

David Smith
dj.daviator@btinternet.com

In a change to his normal flight plan, David Smith provides a list of explanations of the aviation jargon commonly heard on the airband, before offering an ATC profile of Hawarden Airport in North Wales.

- Abeam:** Passing a specified point at 90 degrees to the left or right
- Abort:** Abandon take-off or return prematurely
- Active:** The runway-in-use
- Actual:** The current weather conditions
- Airprox:** Official term for a near-miss.
- Alternate:** An alternative airfield if unable to land at the destination
- Approach plate:** Another term for approach chart
- Approach sequence:** Position in traffic onto final approach.
- Auto-rotation:** Helicopter practice forced-landing.

- ATIS (pr.: 'Ay-Tiss'):** Automatic Terminal Information Service
- Avgas:** Aviation gasoline
- Backtrack:** Taxi back along the runway
- Bandboxed:** Two or more frequencies monitored by one controller during quiet periods
- Base check:** Periodic training flight to check the competency of a commercial flight crew
- Base turn:** Turn on to final from instrument approach when not on a reciprocal of outbound track
- Blind transmission:** A transmission from one station to another when two-way communication cannot be established, but where it is believed that the called station can receive the transmission
- The Boundary:** The boundary between Flight Information regions/ the edge of a Control Zone.
- Box:** Radio, Box One being the main set and Box Two the standby
- Breakthrough:** Transmissions on one frequency breaking through on to another
- Build-ups:** Cumulonimbus clouds

- CB:** Also referred to as 'Charlie Bravo'. Cumulonimbus clouds
- Centrefix Approach:** Self-positioning to final approach using the aircraft's Flight Management System
- Charlie:** That is correct (common HF usage)
- Chopping to:** Military term for changing frequency approach
- Clearance limit:** A specified point to which an ATC clearance remains effective
- Closing heading:** Heading to intercept the ILS
- Coasting in/out:** Crossing the coast inbound/outbound.
- Company:** (as in 'follow the company') – an aircraft belonging to the same operator as the subject
- Conflicting traffic:** Other aircraft in the vicinity, which may prove a hazard
- Crosswind:** Strength of wind from the side on final approach component
- CTOT:** See-Tot, Calculated Take-Off Time (Slot)
- Data:** Temperature, QNH (atmospheric pressure), runway in use, and so on.

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Fig. 1: Jet Provost at Hawarden. Fig.2: Hawarden control tower has been heavily modified from the original wartime building.

Detail: Intentions during a particular training flight

Direct: Flying from one beacon or geographical point straight to another

Discrete: Separate frequency usually devoted to one aircraft for PAR talk-down

Div Arrival: Arrival message sent to destination and other agencies when aircraft diverts en route

Dogleg: Flying a zig-zag to lose height

Drift: The effect of wind on an aircraft

En route: (as in: 'report going en route'): changing to another frequency

Established: Aligned or 'locked on' with the ILS

Fanstop: Practice engine failure

Flag: Warning flag on cockpit instrument that ILS or other ground-based aid has failed or is not being received correctly

Fod: Jargon word for airfield debris; derived from the abbreviation of 'foreign object damage' but now deemed to be 'foreign object debris'

Four Dee etc.: 4 miles DME (Distance Measuring Equipment)

Free call: A call to a ground station without prior co-ordination by landline between this and the previous ATC unit with which the aircraft was in contact

Glidepath: The final descent path to the runway on an ILS approach

Go around: Overshoot runway and re-join circuit or carry out missed approach procedure

Going en route: Changing to another frequency (see above)

Good rate: Unofficial abbreviation for a good rate of climb or descent

GPU: Ground Power Unit

Guard frequency: International Distress Frequency monitored continuously by long-distance aircraft

Guesstimate: Just what it implies!

Heading: Direction in which the aircraft is pointing (See also Track).

Intentions: Course of action after a missed approach etc.

IR Test: Instrument Rating Test

Jet A-1: Turbine fuel

LVPs: Low Visibility Procedures (spoken as written).

Mach: Speed expressed as a ratio of the speed of sound (Mach-1)

MOR: Mandatory Occurrence Report

Navex: Navigational Exercise.

No ATC speed: Unofficial abbreviation for 'no ATC speed restriction'.

ATC Profiles 25: Hawarden

ICAO Code: EGNR IATA Code: CEG

Frequencies	(MHz)	Hours of Operation
Hawarden Approach/Radar	120.055	0630-2100 0830-1900 Sat, Sun
Hawarden Director	130.015	As directed by ATC
Hawarden Tower	124.955	Hours as above
ATIS		
Hawarden Information	125.430	
Hawarden Fire (non-ATC)	121.605	Fire vehicles attending aircraft on the ground
NAVAIDS		
	ILS/DME Cat I on Runways 04 and 22	
	HAW NDB 340.000kHz	
HOLD		
	KEGUN	
RUNWAYS		
04	2093 x 45m	
22	2093 x 45m	

NOTES (A-Z)

Cat II/III Operations

Not available. However, Low Visibility Procedures (LVPs) are in force when visibility is 1,639m or less. Visibility 800m or less: Operations restricted to one aircraft movement at a time. Visibility 400m or less: All airfield operations cease until visibility increases to above 400m.

Circuit Procedures

Circuit directions variable. Circuit heights: fixed-wing piston 1,000ft, Jet 1500ft, helicopters 800ft. All above aerodrome level.

Flight Procedures

For aircraft inbound to Hawarden from the Airways System, to provide improved ATC handling a system of Standard Inbound Routes is established. In some cases, these are coincident with Standard Arrival Routes (STARs) to Liverpool Airport in which case the appropriate STAR Designators will be used. Aircraft departing Hawarden to join the Airways System will be issued with a standard outbound clearance referred to as a REXAM 5 or WAL 4 departure as follows: REXAM 5 Runway 22 – join controlled airspace on track REXAM climbing to 5000ft. REXAM 5 Runway 04 – after departure, immediate right turn remaining outside the Manchester CTA, join controlled airspace on track REXAM climbing to 4000ft. WAL 4 Runway 04: Turn immediately left on track WAL, climb to altitude 4000ft. WAL 4 Runway 22: Turn immediately right on track WAL, climb to altitude 4000ft.

Ground Movement

The visibility of Aprons N and C from the ATC Control Tower is restricted. Aircraft may be issued with conditional clearances concerning other aircraft movements. Aircraft movements and engine running on these aprons are subject to ATC approval. The area west of Taxiway D is defined as 'Apron A'. All aircraft operations are subject to ATC clearance on Apron A.

Helicopters

Unlit Helicopter TLOF marked by 'H' is positioned north of Taxiway Juliet, suitable for helicopters with greatest overall length not exceeding 13m (daylight use only). Police aiming point is marked by a triangle at the northern end of taxiway Juliet, exclusively for use by police aircraft, following unit-specific procedures.

Frequency Monitoring Code

Pilots operating in the vicinity of – but intending to remain outside of – the Hawarden RMZ and maintaining a listening watch only on Hawarden Radar frequency (120.055MHz) are encouraged to select SSR code 4607.

Training

VFR and IFR training for based and non-based operators available during published operational hours.

Radio Mandatory Zone (RMZ)

For flight within the RMZ aircraft commanders must comply with one of the following: Establish satisfactory two-way RT communication with and pass pertinent flight details to Hawarden Radar (120.055MHz) before entering the RMZ. Maintain two-way communication with Hawarden Radar whilst operating inside the RMZ, unless otherwise instructed. Display the Hawarden Frequency Monitoring Code (FMC) (4607) with Mode C and monitor Hawarden Radar (120.055MHz) before entering and whilst inside the RMZ. Selection of the FMC does not imply receipt of an ATC service. Pilots remain responsible for navigation, separation and terrain clearance They are expected to remain outside controlled airspace at all times. When a pilot leaves the RMZ they should deselect the FMC.

Visual Reference Points (VRPs)

Beeston Castle; Borrass Quarry; Chester (A55 (T)/A51 (T)); Flint Bridge; Mold Town (A494/A541 Chester Road Roundabout (East of Mold Town); Padeswood Cement Factory; Point of Ayr Lighthouse; Poulton Disused Aerodrome.

Warnings

Pilots are reminded of the proximity of Restricted Area EG R311, 5nm north of the aerodrome. Westerly and easterly surface winds of greater than 15kt may lead to turbulence from factory buildings. There is a high ground, rising to 1848ft, between 5 and 10nm southwest of the aerodrome. This ground rises steeply beyond 6,500m throughout the climb-out area.

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Nosig: No significant change in weather
Notam: Notice to Airmen.
Off-blocks: The time the aircraft commenced taxiing or pushback
On-task: Aircraft reporting on scene or job
Orbit: Circle, usually over a specified point
Pattern: American equivalent of circuit
Pax: Passengers
Pop-up traffic: Traffic suddenly appearing on the radar because it has just climbed into coverage
Powerback: Reversing off an apron stand under an aircraft's own power
PPR: Prior permission by telephone required for landing
Practice asymmetric: Engine failure simulation on multi-engined aircraft.
Procedure turn: Similar to base turn (see above) except that the aircraft retraces its steps on an exact reciprocal of the outbound leg.
Pushback: Reversing out of an apron stand with the aid of a special vehicle (a 'tug')
Radar heading: A heading imposed by a radar controller
Radar overhead: Radar blind spot above aerial
Radar vectoring: Specified headings, which are given by radar
Radial: Magnetic bearing line from or to a VOR beacon
Ready message: Sent to Flow Management in the hope of an earlier CTOT (slot)

Ready in sequence: Ready for departure on reaching the head of the queue at a holding point
Recovery: Military jargon for 'land back at base'
Release(d): Control of a particular aircraft handed over from area controller to approach, or authorisation from the area for an aircraft to allow an aircraft to take off
Regional: The QNH (atmospheric pressure at sea level) for a defined geographical area
Rejected take-off: Abandoned take-off procedure, sometimes practised during pilot check-outs
Resume own navigation: Revert to self-navigation after a period of radar vectoring
Sector: Each leg of a series of (usually) scheduled flights. Also: the sub-divisions of an area control service
Sécurité: Prefix to RAF flight safety message
SID: Standard Instrument Departure
SIGMET: Significant met conditions
SNOCLO: Airfield closed during snow-clearing operations
Speed Limit Point: Position before which an inbound aircraft entering a Terminal Area must have slowed to speed-limit (normally 250 knots). For departing traffic, speed restriction is lifted here
Squawk: Secondary Surveillance Radar code
Stand: Numbered parking position on the apron

Standard Missed: Procedure to be followed if an aircraft is unable to land from an instrument approach
Stepdown Fix: A defined point on the final approach track indicating that a critical obstacle has been safely overflown and descent to next specified level may be commenced
Stepped on: Someone else transmitted over you
Stratus: Low-lying cloud layer
Stud: Military pre-set frequency
TAD: Tactical Air Directive (frequency)
TAF: Terminal Aerodrome Forecast
Teardrop: A 180-degree turn, to land back on the runway from which one has just departed (Often used by circuit-training aircraft when runway in-use is changed)
Tech stop: En-route diversion for technical reasons, such as refuelling
Tempo: Forecast temporary weather change
Three greens: Indication of wheels down and locked
Topo chart: Topographical chart
Track: The path of an aircraft over the ground
U/s: Unserviceable
Waypoint: A pre-selected geographical position used with a Flight Management System.

[Do you know of any other terms and phrases used in aeronautical communications? If so, please let the editor know - Ed.]

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Software Defined Radio

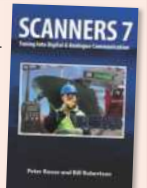
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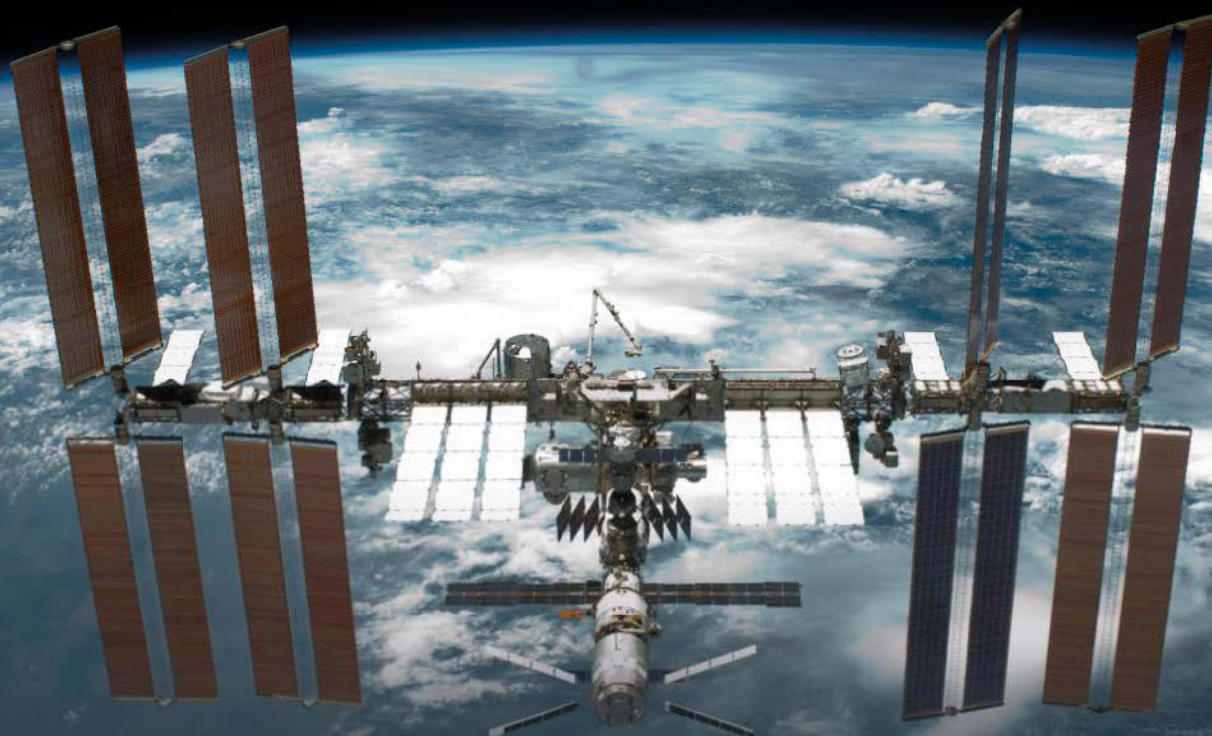
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Tim Kirby
longworthtim@gmail.com

This month Tim Kirby looks at communications from the International Space Station (ISS) and suggests how you might go about listening for signals from the station for yourself, and with relatively simple means.

It's always nice to be able to report on something which I think most listeners will be able to go out and try. I have got one of those for you this month: In early September, a crossband repeater system for radio amateurs was placed into operation on the International Space Station (ISS, Figs. 1 and 4).

A press release from the 'Amateur Radio on the International Space Station' organisation (ARISS) read: "The ARISS team is pleased to announce that setup and installation of the first element of our next-generation radio system was completed, and amateur radio operations with it are now underway. This first element, dubbed the InterOperable Radio System (IORS), was installed in the International Space Station Columbus module. The IORS replaces the Ericsson radio system and packet module that were originally certified for spaceflight on July 26, 2000. Initial operation of the new radio system is in FM cross-band repeater mode using an uplink frequency of 145.990MHz with an access tone [CTCSS] of 67Hz and a downlink frequency of 437.800MHz. System activation was first observed at 01:02 UTC on

Cursory Cosmic Contacts

September 2. Special operations will continue to be announced [...].

The full announcement can be read at this URL:

<https://www.ariss.org/donate.html>

I saw the announcement on Twitter and checked the time for the first pass of the space station that would be 'visible' here in West Wales – well, at least the first one when I would be out of bed, given that night passes were the norm around this date. I found it was at approximately 0825 (local time) on September 3rd, 2020.

As with all Space Station passes, it approaches us from the west. Where I live, am lucky in that I hear it approaching before the majority of European stations will start to hear it.

A quick blip of a carrier on the uplink, and I heard the 437.800MHz downlink spring into

Fig. 1: ISS: The overall size of the International Space Station can be appreciated in this photo.

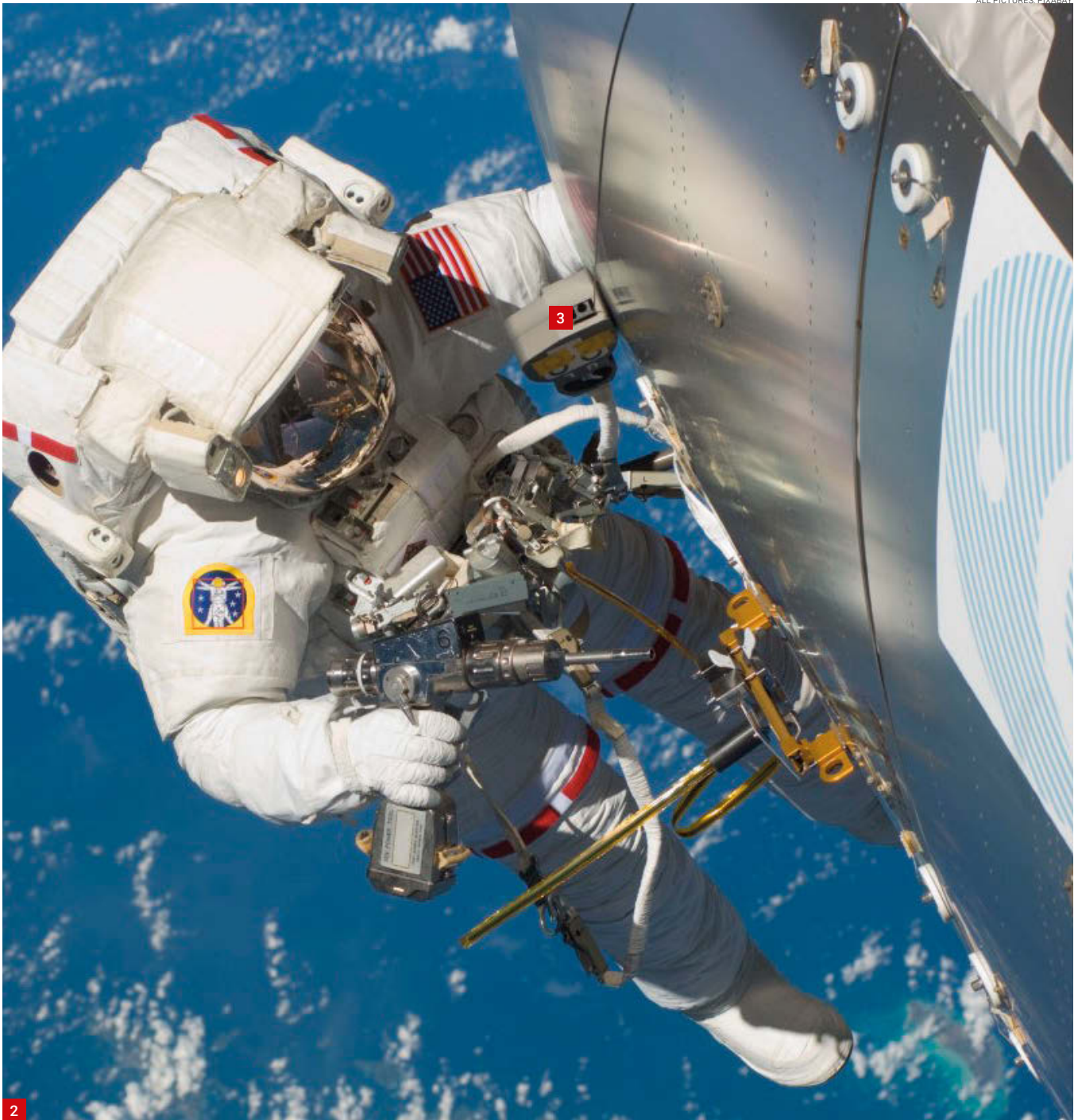
Fig. 2: I don't like going up ladders. How about this for a bit of 'home maintenance'? **Fig. 3:** A graph showing the variation in height of the ISS. **Fig. 4:** The ISS Detector – an app for your phone showing when the ISS will next be passing your location.

action and I was very quickly able to have my first contact (a very brief one) with another amateur station near London. However, stations from all over Europe are audible through the system.

How and When To Listen

Perhaps you would like to try listening to the ISS for yourself! A simple handheld scanner will do the job very nicely. The nominal frequency of the downlink is 437.800MHz. However, depending on the pass, the Doppler

ALL PICTURES: PIXARAY



Shift may cause the frequency to be raised by up to 10kHz as the satellite speeds towards you at around 17500 mph (or 28000 kph if you prefer!). You could therefore program five frequencies into the memory of your scanner 437.810, 437.805, 437.800, 437.795, and 437.790MHz.

With all these frequencies available in memory, as the space station moves across the sky with the Doppler reducing the apparent frequency of the downlink, your scanner should lock on to the most appropriate fre-

quency. You can, of course, tune the downlink manually for best reception, you will notice a fuzziness in the quality of the signal as the frequency changes; this is the time to adjust your receiver.

When should you listen? Of course, you will only be able to hear signals when the International Space Station is in the skies above you so you will need one of the many programs or websites which can tell you exactly this. You could use the *Heavens-Above* website.

<https://heavens-above.com>

On Your Smartphone and Computer

If you have a smartphone, I find some of the apps available are the most convenient way of finding out when the Space Station is around (Fig. 2). For Android, you might find the *ISS Detector* or *AMSATDroid* apps useful. On iOS, there's plenty too, *ISS Detector*, *ISS Tracker*, *Sat-Sat*. They are all free! If you get more seriously into satellite tracking, there

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are some other apps for smartphones which cover more satellites, allow you to see the footprint of the satellites and so on – but that can come later.

If you have a PC – or perhaps a Raspberry Pi – then, of course, you can run a satellite tracker on there. *GPredict* is a very nice tracker, which shows you where satellites are at any point in time. It also allows you to list future passes. If you have a Raspberry Pi lying around doing nothing, then perhaps this is a good chance to put it to good use! Connect it up to a big screen and it will look great in your radio room! The Raspberry Pi site shows the features of *GPredict* and the very simple installation instructions at

<https://tinyurl.com/y63da4kg>

As long as your Raspbian operating system is up to date, you should just be able to type `sudo apt-get install gpredict` and the software will be installed for you.

You'll be able to track the ISS and any other satellites you wish. Remember to set your location so that the passes will be accurate for your latitude and longitude.

You can run *GPredict* on Windows, OS X or Linux. You can read more and find the downloads at

<http://gpredict.oz9aec.net/index.php>

Other free satellite programs are available. Although it has not been updated in about 15 years, there still seems to be a fair bit of enthusiasm around for the Orbitron tracker among satellite enthusiasts.

<http://www.stoff.pl>

You will need to update the orbital elements files for whatever satellite tracker you use. This may well happen automatically, it does in the case of many of the smartphone apps.

This means that your program is kept up to date with changes in satellite orbits.

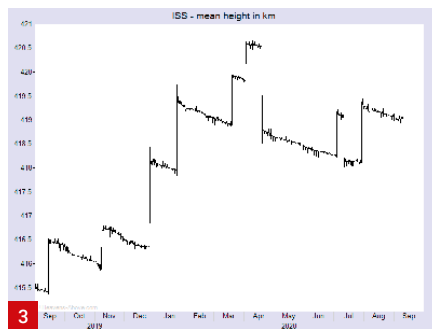
Re-Boosts and Footprints

The latter is particularly important with the International Space Station which has to 'boost' its orbit from time to time. There's an interesting graph available at the *Heavens-Above* website

<https://tinyurl.com/yyrsemh>

It shows how the height of the space station changes over time (Fig. 3). It is surprising just how much variation there is. Re-boosts are done by using the thrusters on visiting supply vessels or the thrusters on the *Zarya* and *Zvezda* modules. I was intrigued to learn that the height of the ISS is now significantly greater than when the station was being served by Space Shuttle flights.

Since the construction of the space station in 2011 and after the Space Shuttle fleet was



retired, the orbit has been raised from around 355km to an average of 415km (at the time of writing it's at 428km).

Using your satellite prediction program, you can view the 'footprint' on the surface of the earth that the International Space Station can 'see'. In other words, transmissions from the space station should be audible everywhere in that area (subject to the ground terrain and local effects such as trees, hills and buildings).

If you are listening to the repeater on the space station, you should be able to hear stations calling through from anywhere in the footprint. You will hear stations give their call-signs (mine, for example, is GW4VXE). The first part of the call-sign before the number is known as the prefix (in my case, GW) and indicates what country the station is from. In my case, Wales. You may be very conversant with amateur radio prefixes or not, but if you need to look them up there is a good list on the Radio Society of Great Britain's website at <https://tinyurl.com/y5v5td2j>

Transmission Characteristics

Most likely, the contacts you hear through the repeater will be very cursory. The ISS is generally audible for a maximum of 10 minutes for each orbit. There are often many stations wanting to use the repeater, so long contacts are discouraged unless it is very quiet (perhaps late at night or early in the morning).

From time to time, the crossband repeater may be switched off, so do not be alarmed if you do not hear it. This might be because there is a spacewalk going on, a resupply spacecraft docking or perhaps an ARISS contact with a school. These ARISS contacts take the format of an astronaut answering questions from students at that school and can be quite fun to listen to. These contacts can always be heard on 145.800MHz.

You can see the schedule for upcoming contacts at this URL:

<https://tinyurl.com/y644ftgb>

Other frequencies to monitor during International Space Station passes include 143.625 and 130.167MHz (both FM). These



frequencies will sometimes spring into life when the space station is in range of Star City in Moscow but they are most often heard during spacewalks. During spacewalks, it can also be worth listening on 121.100 and 121.275MHz FM.

David Ryan from near Doncaster often monitors these frequencies during a spacewalk and has had heard signals many times. Dave says that the frequencies have been the same since the days of *Salyut* and *MIR* spacecraft.

The great thing about listening to these signals is that it does not take complicated equipment. A handheld scanner will do the trick very nicely, sometimes better, than a base station antenna such as a white stick vertical or a discone because you can quickly reorientate the set and antenna by hand to receive the best signals.

I hope you have found this article interesting and that you will have a go at listening to the communications from the International Space Station. The new crossband repeater means that there will be something to listen to on most passes, even if nothing else is active.

Good luck! Happy listening and please let me know how you get on.

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1

Women in International Radio

Chrissy Brand
chrissylb@hotmail.co.uk

As approximately half of the world is female, it is surprising that there is still so much under-representation of women in most professions. Radio and the media professions are slowly addressing this disparity but there is still a long way to go. Of course, it is important that the best candidate is appointed to a job – regardless of gender.

However, that often fails to happen, and in professions and fields where women are underrepresented, it is not because men *per se* are better than women at a job, but simply because society is still operating on a patriarchal model that often fails to give access to

Chrissy Brand takes a look at women presenters in radio today, highlights some of yesteryear's female pioneers and is optimistic about current and future developments.

equal opportunities.

Just spend a day listening to radio stations around the world and count the presenters, by their gender. Whether it is the London-based, national radio stations (BBC Radio 4, talkSPORT, LBC, Classic FM and Murdoch's Times Radio), or the UK commercial radio network, you will hear far more male voices than female. The pattern repeats around the world in most stations in Australasia, Asia, Africa, North and South America and Europe. Of course, some countries and some stations are better than others,

but very few seem to have actually redressed the imbalance.

Even where women succeed in getting airtime, and may even reach the top of the profession, there are often major issues around wage parity. Being paid less than your male counterpart for doing the same job, when you both have the same experience and skills, is truly shocking. In this context, earlier this year, BBC journalists and presenters Samira Ahmed and Sarah Montague won their battles against unequal pay and conditions.

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Fig. 1: Women's representation on the air improves with each generation.

Fig. 2: BBC Radio studios now echo to the sounds of more women DJs.

Fig. 3: Anca Dragu at Radio Slovakia International during the 2018 EDXC conference.

Fig. 4: Bush House, home to the BBC World Service for many decades.

Fig. 5: Are women's voices more free and equal on podcasts?

Women on the Air Today

On a positive note, women of all ages and backgrounds are gradually being better represented on the global radio scene today than ever before (Fig. 1).

The mainstream is being challenged in recent years, with women from BAME and other minority backgrounds also, finally, finding presenting and DJ roles. BBC Radio One Extra and Radio One have boosted the careers of many talented young broadcasters: Jaguar Bingham was previously on Brixton youth-led station Repräsent and now has a BBC Radio One dance floor music show. Tiffany Calvert presents BBC Radio 1 Xtra's Rap Show, Sian Anderson is in charge of the Saturday afternoon show, while Snoochie Sly takes the controls for the late-night slot (Fig. 2).

Perhaps the BBC DJ who plays some of the sounds closest to my heart is Jamz Supernova. Her forward-thinking scenes from around the world showcase alternative R&B, experimental hip hop, jazz and leftfield electronica.

In the community radio scene, Brooklands Radio in leafy Surrey air a weekly programme called *Just Women*, which has recently featured a life coach, marketing guru, greetings card maker and a medicinal cannabis advocate.

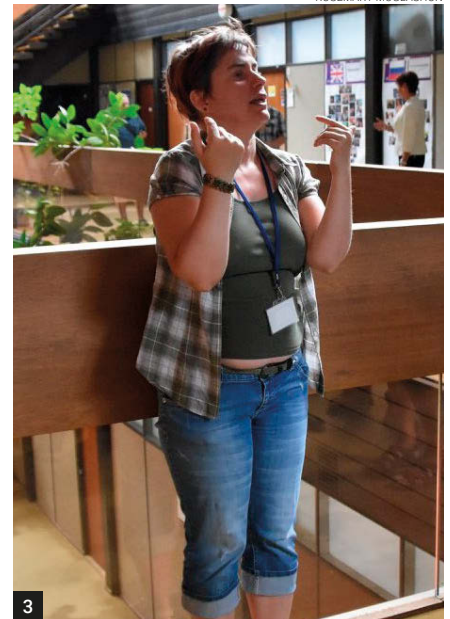
I enjoy at least three programmes that are presented by mature women, who have all come from elsewhere in the arts. Poet and teacher Doris Davenport is an African-American, Appalachian, LGBTQ feminist. She hosts a programme on the Chicago progressive talk station WCPT 820.

WCPT "*Live, local and progressive*", is also home to Joan Esposito, who has a background as a television anchor and in a media training company. Her weekday afternoon programme goals, "*are to make the show inclusive, topical, and interactive. She will react to the news of the day and find out what is happening in the neighborhoods around Chicago. She will talk about politics, issues, and culture and have some fun along the way.*"

On Radio New Zealand, Karyn Hay has



CHRISSY BRAND



ROSEMARY MCGLASHON



CHRISSY BRAND

presented a late-night show since February 2018, *Lately with Kayn Hay*. Her career took off in the 1980s with music video show *Radio with Pictures*. Karyn became New Zealand radio's first female rock music DJ. She also led a campaign to ensure a quota of New Zealand music was played on national radio and was the inaugural chair of the Auckland Chapter of Women in Film and Television.

Radio Slovakia International has had better female representation than most, ever since it started in 1993. When I visited

the station in 2017 and 2018, there was about a 50/50 split between male to female language service presenter-journalists.

In the English Service, Zuzana Botikova hosted a programme on education, tourism, social phenomena and politics; Martina Simkovicova spoke on the arts, music and cultural minorities and Anca Dragu (Fig. 3) concentrated on foreign policy, minorities, NATO, the EU, sports, and healthcare.

Another factor that works against some women (and also men) is ageism.

For the latest news and product reviews, visit www.radioenthusiast.co.uk

Websites

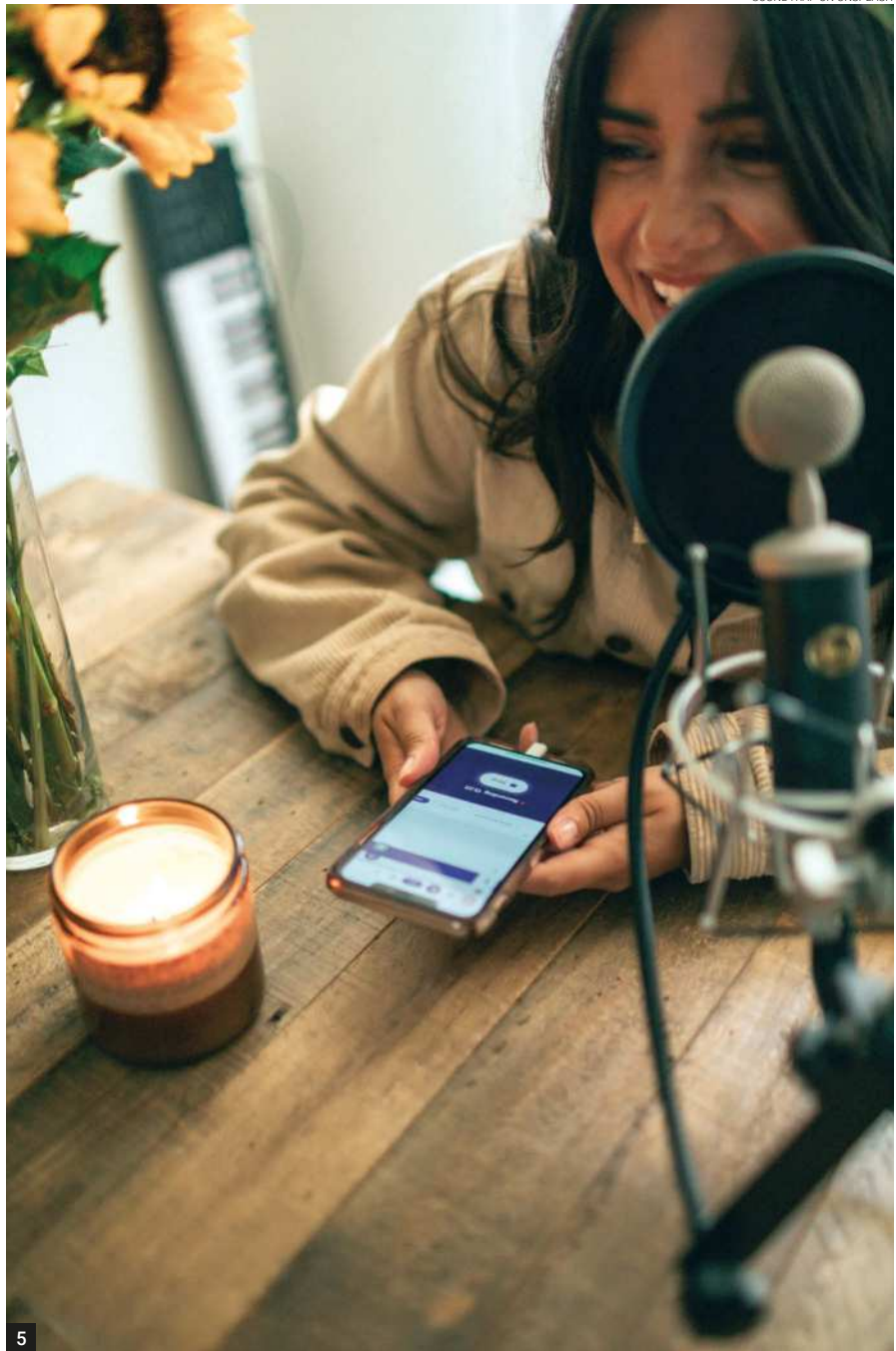
- BBC unequal pay cases
<https://tinyurl.com/y286y43g>
- BBC World Service London Calling, February 1975 and Random Radio Jottings, November 2012
<https://tinyurl.com/y65wuc9a>
- 50 Years of Radio One - Annie Nightingale
<https://tinyurl.com/yxbzmo7m>
- Beyond London: the North. History of the BBC
<https://tinyurl.com/y4o5336r>
- BBC Archive shines a light on the Northern social documentary pioneer Olive Shapley
<https://tinyurl.com/yytam4fn>
- Radio With Pictures
<https://tinyurl.com/y4xjtfv6>
- The UNESCO Courier. Radio stronger and more vibrant than ever, January to March 2020
<https://en.unesco.org/courier/2020-1>
- Werk it! A Women's Podcast Festival
www.werkitfestival.com
- Podcast Magazine
<https://tinyurl.com/yysl43ye>
- The Strong Manchester Women Podcast
<https://tinyurl.com/yy4mlqjb>
- The Women Who Overcame Radio's Earliest Glass Ceilings by John Schneider
<https://tinyurl.com/yy4lpkna>
- NPR programme about WHER, Memphis
<https://tinyurl.com/y5u8z14z>
- Usha Mehta
<https://tinyurl.com/y4nh33qs>
- Sue Scott's Island of Discarded Women Podcast
www.islandofdiscardedwomen.com
- European Women in Technology Conference, Amsterdam, November 24th and 25th 2020
<https://tinyurl.com/y2raxd4g>

When NPR programme *A Prairie Home Companion* changed hosts in 2016, Sue Scott was dismissed at the age of 59, while older male actors were retained.

Sue, a talented radio theatre actor, felt this was down to sexism and ageism. Turning a negative into a positive, she started a podcast that champions women of all ages and many ethnicities, in the sometimes light-hearted but always hard-hitting, *The Island of Discarded Women*.

Podcast Possibilities

The independent podcast industry has afforded more opportunities for female professionals. One example is Lisa Francesca Nand. She started at BBC Radio before becoming a co-presenter on the *Ian Collins Show* on talkSPORT. When appointed in 2006 she was the first female presenter on talkSPORT. She also fronts the *Big Travel Podcast* (see this



month's *International Radio Scene* column in this issue).

Certain women are doing well in podcasting and, while once upon a time, being a working mother usually hampered your career chances, there are now times when it can be a plus.

In the summer, the San Diego based publication *Podcast Magazine* published its "Top 50 List for Moms of Podcasting." These included Marsh Naidoo's *Raising Kellan*, a podcast aimed to inspire, motivate and educate parents raising a child with special needs.

The *Career Mom* podcast has reached over twenty episodes so far, with many contributors, all addressing the statement that, "Being a mom is hard. Having a career is hard. Doing both is really hard! Let's talk about it."

Meanwhile, in the UK, podcasting opportunities abound. The *Strong Manchester Podcast* is a series which highlighted the achievements of 14 Manchester women from all walks of life, in "a British Podcast Award-nominated series of inspiring conversations with the women. Manchester has a history of

Books

- *Radio Prague, 65 Years* (Radio Prague publication, 2001)
- *Last Train to Hilversum, A Journey in Search of the Magic of Radio* by Charlie Connelly (Bloomsbury Publishing, 2019)
- *Hey Hi Hello: Five Decades of Pop Culture from Britain's First Female DJ* by Annie Nightingale (White Rabbit, 2020)
- *Broadcasting a Life* by Olive Shapley (Scarlett Press, 1996)
- *Behind the Wireless: A History of Early Women at the BBC* by Kate Murphy (Palgrave Macmillan, 2006).

very strong women. Women who push the envelope, start movements, smash glass ceilings, stand up for their rights and turn the wheels of progress."

This podcast series is another worthy approach, using broadcasting or podcasting to publicise the role of women in wider society.

International Radio Pioneers

Some of the early radio pioneers not only had sexism to battle but wider conflicts. At the age of 22, Usha Mehta ran an underground radio station in India, during the country's resistance against British imperial occupancy.

She started the station in 1942 from a secret location in Mumbai. The on-air announcement for the broadcasts, which were aired in Hindi and English was, "This is the Congress Radio calling on 42.34 from somewhere in India."

As a result of standing up for her fellow Indians' human rights, Usha was jailed for four years.

Radio throughout the world appears to suffer from many of the same issues. In the USA, there have been attempts in the past to counteract gender imbalance by creating radio stations that were female-only.

In 1955, WHER (a clever call sign!) was one of the first music to take this approach, with all its DJs being female. Based in Memphis, Tennessee, it ran until 1973. Other stations in Toronto, Chicago and New York (WNEW) also ran female format stations.

When I worked at the BBC World Service in the 1980s (Fig. 4), my colleagues included several experienced female reporters and presenters who were respected all over the world.

The devotion of some World Service audiences was such that I met many

listeners from far-flung corners of the globe who came to Bush House during their London visits. They arrived in order to present newsreaders and continuity announcers with boxes of chocolates and flowers, and occasionally offers of dinner dates, as a way of thanking them for being an authoritative but reassuring voice in times of crisis,

One of these World Service recipients was Pamela Creighton, who worked for the BBC from 1955 to 1993. A host of *Woman's Hour* on the BBC Light and Home Services in the mid-1960s, author and journalist Peter Hitchens described Pamela's role in the male-dominated broadcasting business, in the *Mail Online*, April 23rd 2014, "... among the gentlemen there was also the evocative voice of Pamela Creighton, bursting with intelligence and so English you can almost see the meadows and woodlands."

Meryl O'Keefe (1929 to 2019) was another post-World War II radio-presenter pioneer. Born in Kenya, in the 1950s she became the first female newsreader at the South African Broadcasting Corporation. She joined the BBC World Service in 1974, after several years in television. Her TV career started as one of the original ITV Southern Television presenters in 1958 and went included *Come Dancing* on BBC Television in 1963.

The negative and, frankly, laughable, views expressed by some about female voices on the radio, even in the 1970s, were outlined in Meryl's obituary in *The Times* (October 25th 2019). It highlighted the commonplace misogyny in broadcasting, "in the mid-1970s, she was defying what had been an orthodoxy among the male BBC management for decades. She later recalled assertions that women's voices lacked the authority needed to read the news, or that they would not cut through the hiss of shortwave broadcasting. Other managers suggested women on-air sounded too posh or would distract the audience. It was even claimed that women were too emotional for the job, liable to break down when announcing upsetting news."

Although it is true that they, and other, BBC World Service presenters (such as Ann Every and Pippa Harben) were breaking down the barriers, most of the female presenters then on BBC national and international radio were white, middle-class and privately educated.

As I showed earlier, this is a far cry from today's welcome improvement. Back in 1970, the only national BBC female DJ

was Anne Nightingale, who became the first Radio One DJ.

Perhaps the first legendary woman on BBC radio though was Olive Shapley. Starting on BBC North's *Children's Hour* in the 1930s, she went on to produce and present hard-hitting documentaries and interviews about the disadvantaged. These included *The Classic Soil*, *Homeless People* and *Miner's Wives*.

As a presenter on *Women's Hour* in the 1950s, she introduced previously taboo topics such as sex and the menopause. This got her into hot water with the BBC who deemed such subject matter to be too "radical".

Conclusions

This brief overview of national and international radio and podcasts has highlighted a handful of women who have risen to the front of the profession despite the odds stacked against them. It cannot be a comprehensive list (that would require a voluminous book) but it will hopefully redress the balance a little.

It is undoubtedly the lack of equal opportunities plus lack of equal pay when the opportunities are in place, that is the main reason why women presenters (and women in other fields of the broadcasting profession) are underrepresented on the radio.

In the world of podcasts, women can perhaps express their voices more freely, expertly and equally (Fig. 5). Many women seem to thrive where there are independents rather than corporate and establishment, white male-dominated interests in charge.

Steps to initiate change and parity are in place in all fields of the radio and podcast professions. Two fine examples are the Radiodays Europe conference women's networking session and the Women in Technology conference, which takes place (online this year) in late November.

It certainly inspires me, being, "a week-long festival to celebrate the power of resilience amongst female tech professionals as we shine a light on the transformative tech engineered by women of all diverse backgrounds across the world. Let us unite, not just in preserving the sense of unity amongst the females in the tech community, but in solidarity in our collective mission to inspire warriors to fight against the systemic injustices women face.

Unite to define and transform what it means to be a Woman in Tech in the post-COVID-19 era."

Radio News

GEO-HEALTH COLLABORATION VIA

SATELLITE: In the September issue of the *American Geophysical Union's Newsletter*

(*EoS*), contributors are looking at how Earth observation can help scientists with their research. With so much data publicly available from national space agencies like NASA, and the accessibility and reduced costs of launching *CubeSats*, it is important, to consider the many ways in which having an eye in the sky can

supplement *in situ* monitoring. A great example of this is pollen-tracking. Gassed R. Asrar and colleagues explain that on the ground in the United States, there are not nearly enough stations per capita for pollen counting—a labour-intensive endeavour. Physicians concerned with the rising number of people affected by asthma and seasonal allergies recently gathered to discuss the problem. They've already implemented a network of cameras on towers throughout the United States, but they're realizing that existing satellite observations of vegetation can offer important supplementary data that show the start, peak, and end of pollen season. This 'geohealth-collaboration' between medical professionals, public health experts, and geoscientists using Earth observation data could allow many of us quite literally to breathe easier. Remote sensing can also be used for novel purposes—like hunting down the origins of pumice rafts. Philipp A. Brandl writes about how he and his team were able to trace the source of a raft floating in the South Pacific Ocean to 'Volcano F'. Combining seismic data with satellite data was crucial to their endeavour. Finally, be sure to read about the efforts of Benjamin Keisling and colleagues to diversify their university's seminar series. With all the attention being paid to making the geosciences more inclusive, it might seem overwhelming to try to fix everything at once. Keisling's group shows how to focus on a specific problem and assess its challenges.

(SOURCE: *AGU News*, Heather Goss)

<https://tinyurl.com/yxgxlxq9>

HAM RADIO'S UNCERTAIN FUTURE?: Julianne Pepitone wrote in the *IEEE Spectrum Magazine* about the state of amateur radio in the USA. She notes that, anecdotally, white men in their 60s and 70s now make up much of the amateur radio constituency. As these 'baby boomers' age, the fear is that there are too few young people to sustain the hobby. Now, with time taking its toll on the ranks of operators, new technologies offer opportunities to revitalize amateur radio, even if in a form that previous generations might not recognize. Read the full article on the website indicated below, much of it applies to the UK too: (SOURCE: Colin Butler)

<https://tinyurl.com/ychny2bq1>

AMATEUR RADIO SATELLITES: To enjoy all the facets of this subject – and our column *Signals from Space* – you will need to understand some basics, for example, the 'Doppler Effect'. The RSGB kindly uploaded to link below a free PDF that covers all you are likely to need. It is a few years old, but much of it is still very relevant. (SOURCE: RSGB, RE, via Bob Houlston)

<https://tinyurl.com/yy3ksjuc>

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Stand: October 1st 2020

Only legal stations are included. Most stations use 100 – 1500 Watts of power.

D = Germany, DNK = Denmark, FIN = Finland, NL = Netherlands, NOR = Norway, Irr. = irregular, F.pl.: future plan, min. = minutes, Mo = Monday, Tu = Tuesday, We = Wednesday, Th = Thursday, Fr = Friday, Sa = Saturday, Su = Sunday

KHz	Country	Name	Transmitter Site	Schedule (UTC)
3920	NL	Radio Piepender	Zwolle	Mainly weekends
3940	NL	Mike Radio	Heerde	We,Sa,Su 17-23
3955	D	Radio Channel 292	Rohrbach Waal	24/7
3975	D	AM Shortwave Radio	Winsen	Mo 15-23, Tu-Fr 16-23, Sa-Su 07-23
3985	D	Shortwaveservice	Kall-Krekel	Daily 15-2310
3995	D	HCJB	Weenermoor	24/7
5805	DNK	Radio208	Hvidovre	24/7
5825	DNK	Radio OZ-Viola	Hillerød	We 20-22, Sa-Su 11-13. F.pl.: 5980 kHz
5840	DNK	World Music Radio	Bramming	24/7
5895	NOR	Radio Northern Star	Bergen	1300-2210
5920	D	HCJB	Weenermoor	Daily 06-16
5940	NL	Radio Onda, Belgium	Borculo	Irr. F.pl.: 6170 kHz from 25/10
5980	FIN	Scandinavian Weekend Radio	Virrat	1stSaturday of the month
5980	DNK	Radio OZ-Viola	Hillerød	F.pl. in B20. We 21-23, Sa-Su 12-14
6005	D	Shortwaveservice	Kall-Krekel	Daily 07-19
6005	NL	Radio Delta International	Elburg	Fr-Sa 21-02
6020	NL	Radio Delta International	Elburg	Th-Sa 07-18
6070	D	Radio Channel 292	Rohrbach Waal	Mo-Fr 06-22, Sa-Su 05-03
6085	D	Shortwaveservice	Kall-Krekel	Daily 07-17 (Radio MiAmigo)
6115	D	Radio SE-TA 2	Hartenstein	10-11 & 18-19
6150	D	Europa 24	Datteln	Daily 07-16
6160	D	AM Shortwave Radio	Winsen	Mo-Fr 11-19 21-22, Sa-Su 08-19 21-22
6170	FIN	Scandinavian Weekend Radio	Virrat	1stSaturday of the month
6170	NL	Onda Radio, Belgium	Borcilo	From 25/10
6195	NL	Mike Radio	Heerde	From 25/10
7310	D	Shortwaveservice	Kall-Krekel	
7365	D	HCJB	Weenermoor	Daily 08-13
9670	D	Radio Channel 292	Rohrbach Waal	24/7
11690	FIN	Scandinavian Weekend Radio	Virrat	1stSaturday of the month
11720	FIN	Scandinavian Weekend Radio	Virrat	1stSaturday of the month
15560	D	Shortwaveservice	Kall-Krekel	F.pl.
15805	DNK	World Music Radio	Randers	Sa-Su 07-20

Most stations will be broadcasting one hour later UTC as of October 25th2020. This list is compiled by **Stig Hartvig Nielsen** (shn@wmr.dk) each first day of the month – and is based on details supplied by the various radio stations. The list is not copyrighted and may be published everywhere.

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ALL PICTURES: KEITH HAMER+GARRY SMITH, EXCEPT FIGS. 3 AND 4: TALKING PICTURES TV



Keith Hamer
Keith405625.kh1@gmail.com
Garry Smith
Garry405625.gs@gmail.com

Keith Hamer and Garry Smith look back to the 'public service' ethos in the time of the first director-general of the BBC, continue their exploration of the life and work of Paul Nipkow and celebrate World TV Day.

This month we continue our series covering early television pioneers with more details about Paul Nipkow. There is also an insight at what the BBC's first Director-General, John Reith, thought about public service broadcasting in 1927. If you have ever wondered why all the BBC national radio stations have disappeared from your smartphone, we have the answer! Just in case you have overlooked it, November 21st is *World Television Day*, so make a note of this world-shattering event in your diary. Finally, there is the link to the new online home of our regular round-up of DX reception and news.

Early Radio: BBC Public Service

In the July column (*RadioUser*, July 2020: 27-28) we featured the Earl of Clarendon's view of the BBC's role as a *public service* in 1927. George Herbert Hyde Villiers (1877-1955) was Chairman of the BBC Board of Governors. On January 1st, 1927, the *British Broadcasting Company Limited* became

Public Service, Nipkow's Electric Telescope, and a Day of Happiness

the *British Broadcasting Corporation* under a 10-year Royal Charter. John Charles Walsham Reith (1889-1971, 1st Baron Reith, KT, GCVO, GBE, CB, TD, PC) was appointed as the BBC's first Director-General (Fig. 3).

He lost no time at all to tell the nation what *he* meant by *public service*. His original ethos has served the BBC well (and, incidentally, many other world-wide broadcasters) for around nine decades, although the organisation now seems to be rapidly losing the plot. Although the BBC's latest Director-General, Tim Davie (the twentieth full-time DG since 1927 and in-post since September 1st, 2020), will have many tough battles to face with the current government, at least he has solace in his annual salary of £525,000!

Since 2017, the BBC Director-General has been appointed by the BBC Board. In turn, the BBC Board is appointed, in theo-

ry, by HM The Queen, but in reality, the selection is dictated by the government and, in particular, the prime minister. The general forecast looming over Broadcasting House in London could, perhaps, be summed up in meteorological terms as "*exceptionally stormy weather ahead!*" Tim Davie in Portland Place must already be looking out of his office window at the approaching storm clouds brewing at Westminster.

Returning to more tranquil times, in a somewhat rambling manner, but interesting nevertheless, John Reith stated back in 1927: "*In order to avoid misunderstandings, let it be said now that public service in this sense means primarily a standard and an outlook, and only secondarily a form of administration. The constitutional change, over from Company to Corporation status, has for the moment drawn some attention to the*



Fig. 1: A collage of BBC national radio station symbols. **Fig. 2:** A typical 'Televisor', using the famous Nipkow Disc scanning system. **Fig.3:** The BBC's first Director-General in 1927, John Charles Walsham Reith. **Fig. 4:** Alexander Bain, inventor of a system to transmit images by telegraphy.

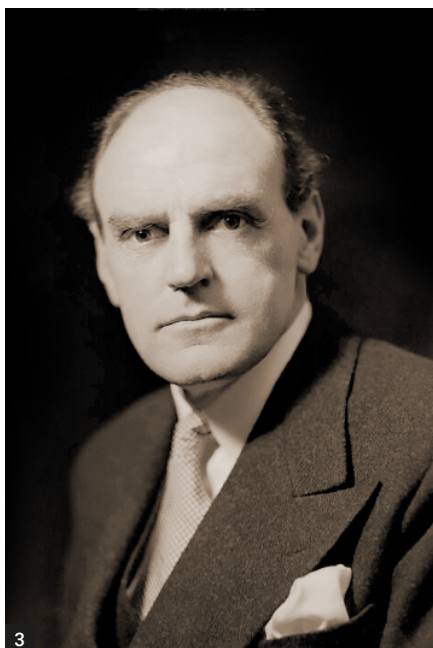
administrative side, as it is change and not continuity that comes into the limelight.

"The outlook, though still developing by experience, is essentially the same. What is this outlook? By the 'public' is presumably meant the totality of the inhabitants of these Islands -and eventually those of the Continent and Overseas -irrespective of age, tastes, education, religion, politics, wealth and status. This generality of appeal was made a cardinal point of policy from the outset.

"Technically, it determined the layout of the stations on the map; it fixed the details of power and design by the average "poor man's" set. It imposed as a necessary ancillary the giving of free advice on technical matters of reception and interference, and it brought about contacts of all sorts all over the country as well as in London. Each year, except 1926, has witnessed the attainment of successive landmarks in this policy of getting within so-called 'crystal' range of the whole population."

So much for John Reith's meaning of the word 'public'.

What did he mean by the word service? In another rather long-winded announcement, he stated: "By 'service' is meant providing this public, to the best of one's power and ability of selection, with at least one programme a day, accessible in good strength and faithful quality to the owner of a cheap set and an average aerial. Certain classes of material were, some still are, excluded by the technical certainty that justice will not be done to them in transmission. Secondly, many sources were available for programmes only to a limited extent, ow-



ing to the opposition of vested interests, i.e. authors, composers, newspapers, concert promoters, theatre managers, artists and others; an opposition based sometimes on artistic, but more often on commercial, grounds since the idea that radio will eventually help and not injure the concert-hall, the theatre, and the newspaper is slow to penetrate. Thirdly, the most careful tapping of public opinion by way of correspondence, conversation and the Press cannot do more than afford data for consideration."

Paul Nipkow (Part Two)

Whilst still a student, Paul Nipkow (1860-1940, see also *RadioUser*, September 2020: 57-58) invented a device known as the *Electric Telescope*. The main component of this invention later became known as the famous *Nipkow Disc* (Fig. 2). His idea to use a rotating disc with perforated holes in a spiral pattern to divide a picture into a mosaic of points and lines was born on Christmas Eve 1883, as he sat alone at home with only an oil lamp to shed light on his revolutionary theory.

Another vital component of his invention was a selenium photocell. This is a device in which the photoelectric or photovoltaic effect, or photoconductivity, is used to produce a current or voltage when exposed to light or another source of electromagnetic radiation.

Four decades earlier, it had been Alexander Bain (1810-1877, Fig. 4), who had transmitted images telegraphically, but the Nipkow disc greatly improved the encoding process.



Nipkow applied for a patent at the Imperial Patent Office in Berlin for his *Electric Telescope*. The application was for the electric reproduction of illuminating objects, in the official category *Electric Apparatuses*. Patent Number 30105 was granted on January 15th, 1885 – retroactive to January 6th, 1884. The fee of 30 German marks was lent to him by his future wife, and the patent was allowed to lapse after 15 years.

However, the further development of his *Electric Telescope* ended when Nipkow took up a position as a designer at the Berlin-Buchloh Institute.

BBC Tunes Out of TuneIn!

If, like the authors, you have been used to listening to BBC radio programmes on your tablet, smartphone or dedicated domestic Internet radio but are now only receiving a short message, or an annoying pseudo-American announcement stating that the *TuneIn* application is no longer available then stayed tuned to this explanation!

Potentially, thousands of listeners to all BBC national radio networks are being denied their favourite programmes, even though they are paying for the channels through the combined radio and television licence (Fig. 1). However, the stations have not disappeared for any technical or financial reasons: Without any obvious public consultation, the BBC has decided to stop broadcasting via the extremely popular and easy-to-use *TuneIn* 'live' radio streaming application simply because *TuneIn* has refused to allow the BBC

to spy on listeners' tuning habits! BBC national radio broadcasts via Tuneln were officially switched off on August 30th, 2019, although they were still available for an extended period on domestic Internet radios.

World Television Day

The United Nations General Assembly has designated Saturday, November 21st, 2020, as *World Television Day*. The official reason given by this highly expensive quango (quasi-autonomous non-governmental organisation) is, "in recognition of the increasing impact television has on decision-making by bringing world attention to conflicts and threats to peace and security". We won't bore you with the rest of the rambling statement.

During our research, it transpires that the UN has a *World Day* for practically every obscure subject imaginable, strategically spread out throughout each year – which provides endless opportunities for privileged UN staff to attend lots of regular 'jollies'!

If television doesn't percolate your pixels, why not try one of the following

World Days? Here are just a few from a list of no less than 134 *World Days: No Tobacco Day, Day Of Social Justice, International Mother Language Day, International Day Of Happiness, Day Of Forests, Water Day and Sport For Development And Peace*, or how about *World Tuna Day*? However, apart from *World Television Day*, there is one other day which took our fancy, *World Radio Day*, held every year in February.

DX-TV & FM News

July was quite a productive and spectacular month for Sporadic-E activity. Analogue TV carriers were observed on many days, mainly from Moldova. There was a noticeable decline in Sporadic-E encounters as we headed into August.

For details of DX reception covering *July and August 2020*, plus other DX news items, please check out the *Radio Enthusiast* website:

www.radioenthusiast.co.uk

Stay Tuned

Please send archive photographs, information, news or suggestions for future topics to us at the E-mail addresses at the top of this column.

Selected Resources

See also: *RadioUser*, July & September 2020

- Baird, J.L. (2004, 2nd. rev. ed.) *Television and Me: The Memoirs of John Logie Baird* (Mercat Press)
- Burns, R. John Logie Baird: Television Pioneer (IEE History of Technology): Television Pioneer (IEE History of Technology)PBHT0280 (History and Management of Technology) by R.W. Burns | 22 Jan 2001
- Fulton, J. and Corrigan, P. Mr TV: The Story of John Logie Baird (4-12 years; Maverick Arts)
- Gorton, K., and Garde-Hansen, J. (2019) *Remembering British Television: Audience, Archive and Industry* (BFI)
- Hilmes, M. (2003) *The TV History Book* (BFI)
- Horrocks, C. (2018) *The Joy of Sets* (Reaktion Books)
- Leavitt, D. (2006) *The Man Who Knew Too Much: Alan Turing and the Invention of the Computer* (Phoenix)
- McArthur, T. (1986) *The Secret Life of John Logie Baird* (Hutchinson)
- McArthur, T. and Waddell, P. (1990) *Vision Warrior* (The Orkney Press Ltd.)
- Norman, P. (2016) *A History of TV in 100 Programmes* (William The 4th)
- Paul Nipkow and John Baird: <https://tinyurl.com/y2juztcq>

Join the RadioUser Team

You love your regular monthly radio magazine. Could you also write for us? The editor is looking for new authors to join our team in 2021, potentially in the following areas:

- Network Radio
- CB and PMR446 Radio
- Software for Radio, and Software-Defined Radio (SDR)
- Propagation, Space Weather, Radio Astronomy

If you would like to share your expertise and enthusiasm with our readers, and if you enjoy testing equipment and software, then please drop me a line. Previous experience in writing for publication is an advantage but not a prerequisite.

Georg Wiessala
wiessala@hotmail.com



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Italian Innovation: The Pizzolorusso City Radio

The editor familiarises himself with a ground-breaking concept in international radio, testing the Palomar City Radio. This highly portable Bluetooth device opens the online doors to the live-streaming of radio from cities across the globe.

Georg Wiessala
wiessala@hotmail.com

This is a radio with a difference. Somehow it reminded me of the dials on vintage radios, on which you could always see an enticing range of cities and locations.

The *CityRadio* takes this concept and brings it fluently into the 21st Century.

The Italian design company Palomar distributes a range of products, from 'soft' maps to personalised globes, bike-locks and radios to Bluetooth-speakers ('The Monkey').

All their products have a fresh, contemporary, feel to it.

The *CityRadio* is no exception to this and appeals through its rubberised surface.

The Helsinki-based design studio under Emanuele Pizzolorusso has introduced the City Radio, a device which allows users to listen to radio stations of different cities all over the world. The highly-portable device which has been developed for the brand *Palomar* allows listeners to discover new music, languages, to travel with their imagination, to get news from abroad, or to learn a foreign language.

The radio offers a 'live' listening experience

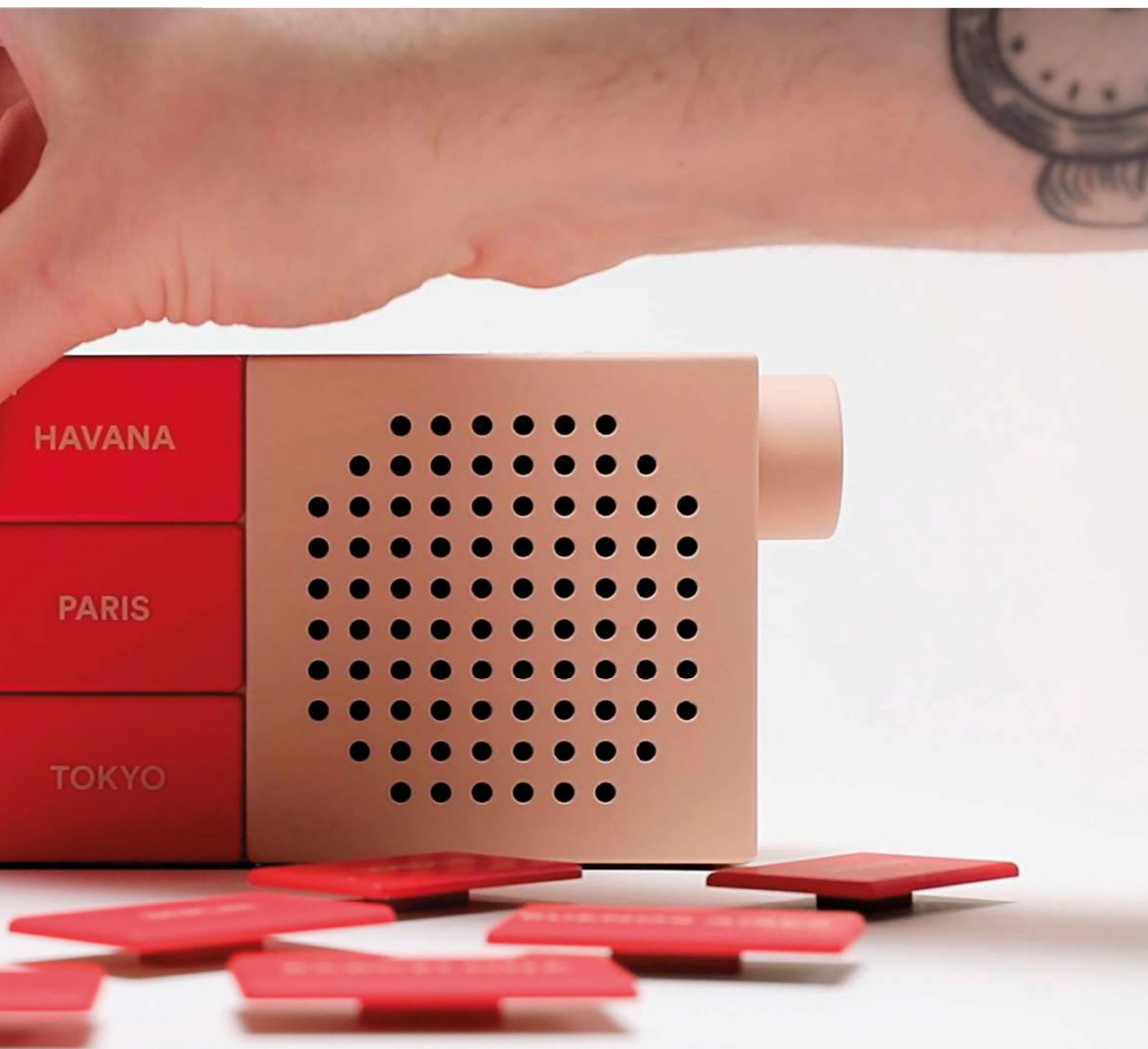
like no other, derived from a concept that organises the world's radio stations *by city*. The manual claims that, for the first time, the experience of listening to live music and broadcasts from international cities' local radio stations is made possible through a physical object, to be touched and listened to. Well, not really, but it is still great fun to use this device.

The *CityRadio App* is the application/program – supplied with the appliance – that allows this city radio to operate. The App

displays a list of radio stations (FM or web radio), categorized by city, which broadcast their programs via streaming. To guarantee the reproduction of the streaming flows, the device on which the app is installed must always have an active data connection.

Let me be clear about this: In order to work properly, the City Radio needs (1) your smartphone *on* and (2) the CityRadio app *open*. Through this *CityRadio App*, you can view the list of available cities, choose and change the selection of the 9 cities that





configure your *CityRadio*, and enable and disable streaming playback of radio stations.

It is also possible to scroll through the radio stations available for each city and to store your favourite station for each city. That station will then be played first the next time you listen. So you can have your favourite station for each city.

The streaming flows of over 60,000 available radios are ensured for quality and transmission speed by an exclusive agreement between Palomar and streaming

flow providers in the world.

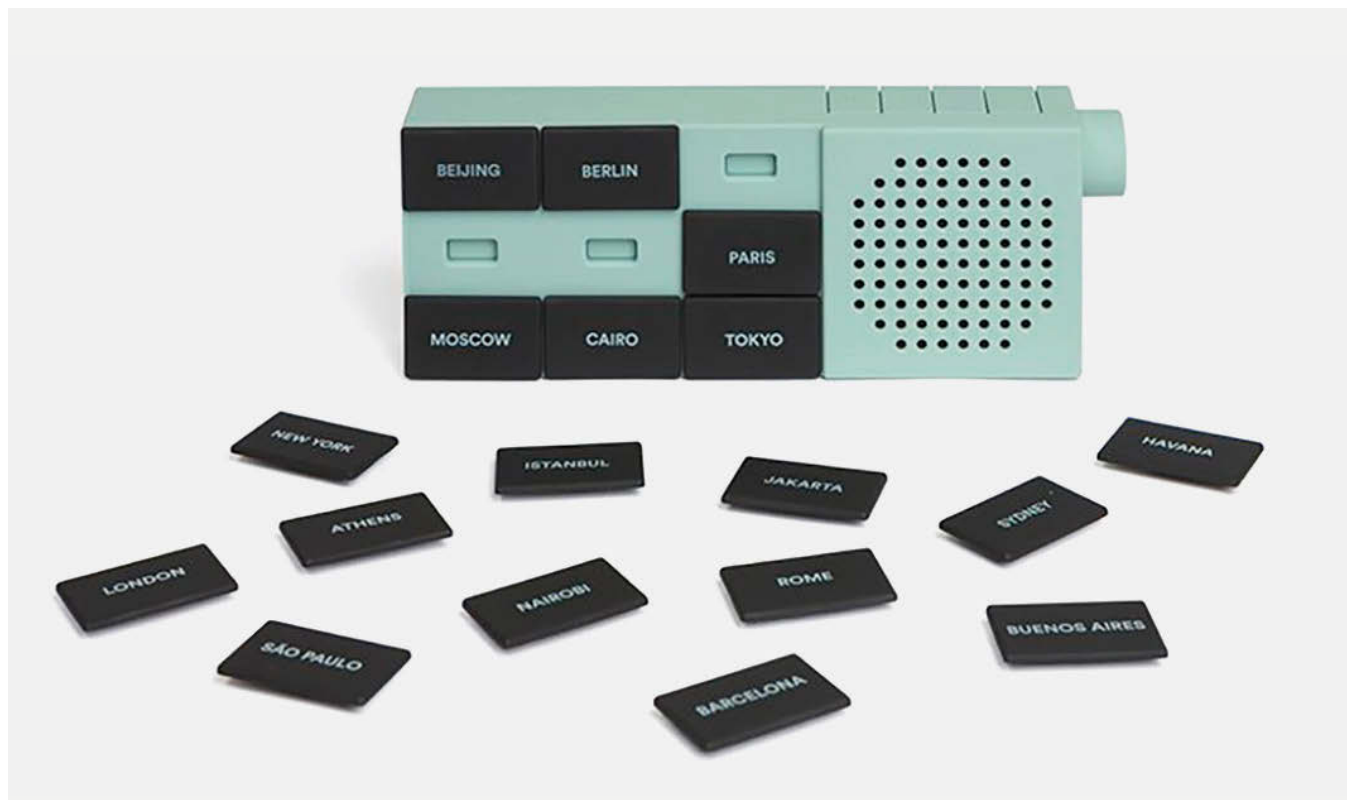
One hurdle I had to overcome – but which is not a fault of the device – was that I had to make sure my smartphone's 'app-permissions' and other 'settings' details were set correctly; otherwise, the app would keep crashing.

Once set up, the radio was a breeze to use and allowed me to travel the world effortlessly, by just changing the magnetic city-labels around and pressing them. There are 18 global cities to choose from.

I can only imagine the cultural debates amongst the makers and designers, as to which locations to include. North America is represented by New York, Africa by Cairo and Nairobi, Australasia by Beijing, Istanbul, Jakarta and Sydney.

- Athens • Barcelona • Beijing • Berlin
- Buenos Aires • Cairo • Havana
- Istanbul • Jakarta • London • Moscow
- Nairobi • New York • Paris • Rome
- São Paulo • Sydney • Tokyo

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Further Information

Design Studio:
<http://pizzolorusso.com/city-radio>
 Designboom:
<https://tinyurl.com/yxmd7nd2>
 SWLing Post:
<https://tinyurl.com/y3bzjtbt>
 Wallpaper:
<https://tinyurl.com/y7gfp9vp>

Once settled on a city, the 'up' and 'down' keys on top of the radio made it easy to explore a wealth of individual stations on all Continents, working your way through all manner of music, for example.

The difference to a traditional internet radio lies in the 'novelty-factor' of playing with the individual city-buttons, and in the way you interact with this device, over your smartphone or directly via the buttons. This will strongly appeal to gadget-freaks and middle-aged male magazine editors.

The audio quality was excellent, which is just as well since there are no facilities for the connection of external loudspeakers, amplifiers, equalisers, and so on. Neither is there, of course, a visible antenna.

The top-right corner of the device may not be the ideal place to have located the main buttons, though, for it is all too easy to inadvertently press one of them when picking up this lightweight device.

A Second Opinion

I sent this device to our *International Radio Scene* and *Emerging Issues in Radio* columnist Chrissy Brand, to test-drive it for a while. Chrissy wrote:

"I have enjoyed putting the City Radio through its paces. It really caught my eye when released earlier in the year - more from the point of view of as a glorious piece

of product design than as a 'must-have' radio receiver.

That initial view still holds sway for me. Both versions of the radio (red and sand or black and powder blue) reminded me of a 1960s vision of what 21st Century products would look like. I'm thinking of François Truffaut's 1966 film of Ray Bradbury's Fahrenheit 451, with its futuristic home gadgets.

It was a little tricky to get the app to align with the named city badges, but it works well enough. The sound quality is fine, and the novelty of having a range of stations from any one of 18 world cities is a nice feature. It would be exciting to see other cities introduced to the range in future, as add-on packs that could be purchased.

The City Radio would look great in-situ anywhere, mine is in my kitchen. Palomar's slogan is correct; the City Radio does bring you sound adventures from around the world. However, so does the Radio Garden app and the rest of the internet. That said, the City Radio is a very welcome addition to my home.

I must go, the coffee is brewing and Jakarta is calling!"

The City Radio retails for €99.

[My thanks go to Chrissy Brand for her input, made at very short notice - Ed.]

David Harris
mydogisfinn@gmail.com

David Harris reviews a collection of essays analysing the intersections between radio music genres and cultural, regional and national identities, especially among some more marginalised communities.

This new collection comprises 13 essays by academics from nine different countries who have been brought together by professors from the Universities of Copenhagen and Aarhus in Denmark.

The starting point here is that music takes up around 50% of all radio content worldwide. Following on from this, the contributors to this volume are mainly interested in the relationship between radio and in how the medium of radio comes to define music.

This book contains some detailed studies of (mainly) community radio stations around the world and of their relationship to the music they are playing, as well as to their listening audiences.

The first report is of the Paris station Radio Alfa 98.6 FM. This station was established in 1987 to serve the Portuguese community. The station plays some Fado music (a traditional form of melancholic working-class music, which originated in Portugal in the 1820s).

Fado is seen as part of the Portuguese identity, and this station for expatriates was seen as helping to maintain a sense of identity. It also championed the 'New Fado', produced by Portuguese-speaking musicians in France.

<https://radioalfa.net>

Moreover, in Darwin (Australia) two stations are targeting the aboriginal population. Radio Larrakia (now called *First Nations Radio*, 94.5 FM) broadcasts mainly in English and plays aboriginal rock music.

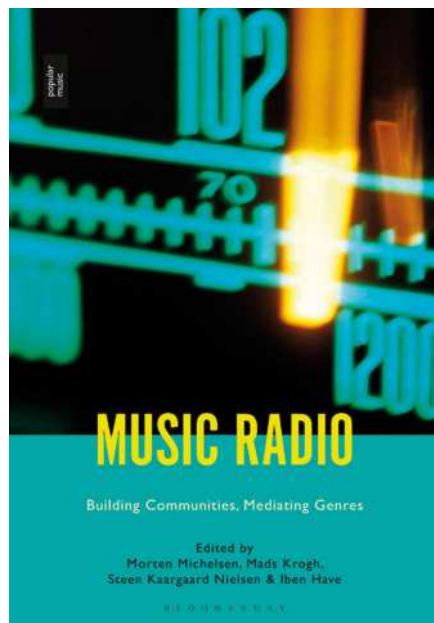
www.firstnationsradio.org

Radio ARDS Yolngu 89.9 FM broadcasts in the *Yolngu Matha* language with a public service remit. Aborigines are very marginalised people and community radio stations run by them are a relatively new feature of the Australian broadcast landscape.

<https://ards.com.au/yolngu-radio>

The next chapter takes us back to France and Beur FM (106.7 FM Paris), a station serving the North African diaspora across urban centres in France on FM and DAB. Beur FM pioneered programmes presented by, and addressing the needs of,

Radio, Music, Identity, & Some Soundscapes



Music Radio – Building Communities, Mediating Genres by Michelsen, M. et al (2020)

Bloomsbury Academic. 329 pp. Pbk. £28.99.

ISBN 9781501365454

www.bloomsbury.com

marginalised North African women.

The station broadcasts in French, Arabic and Berber.

www.beurfm.net

Chapter Four of this diverse title explores the role of radio in promoting certain genres of music in Brazil and Peru. Here, local music is seen as a key concept in nation-building. In Peru, the *Hora del Charango*, a five-string Andean guitar, was used to develop local Andean genres of music. And in Brazil, the 8-bass key accordion became a very popular instrument. Many DXers will remember when the Tropical Band (60 metres) was full of exotic sounds emanating from South America.

Radio also has a role as a way of educating people, as illustrated by a case study of CKUA, Edmonton, Alberta, Canada. This station was originally part of the University of Alberta, which began broadcasting in 1927. The station broadcast on AM until 1983, when it switched to a state-wide FM network. This broadcaster is now a donor-supported station

championing local music and the arts.

<https://ckua.com>

One of the most interesting case studies is of *Evening of Sounds*. This is a 'soundscape' programme broadcast by Finnish national radio, YLE. Listeners request certain sounds, many of which are evocative of the past and reminiscent of rural Finland. Examples include threshing machines, steam engines, old tractors, trains, bees and lapping water. This stretches the definition of what could be described as 'music', but it also illustrates how radio can legitimize any form of sound – this was a very popular programme in Finland.

Switzerland provides the next example for the role of nation-building in a country with four official languages, (French, German, Italian and Romansh). Swiss Radio has a vast collection of Swiss music, including dance, folk and yodel songs. The chapter also looks at the role of Swiss Radio International (SRI) in promoting Swiss culture. I feel certain that many *RadioUser* readers would have enjoyed listening to SRI, which ended short wave broadcasts in 2004 after 70 years of international broadcasting.

There is a good study of what is termed the 'High'/'Low' divide in music radio, separating classical music and pop. In France, listeners could hear pop music via Radio Luxembourg and other stations based outside of France, which are described as marginal (*périphérique*). The first European state broadcaster to recognise the need for a popular music channel was Sveriges Radio (Sweden) in 1961, followed by Denmark in 1963.

These were both in response to the appeal of the offshore pirate stations of this era. By contrast, it took the BBC until 1967 to launch Radio 1 as a dedicated pop music station.

At times, this book is quite a dense read, but it does repay careful study and would be of interest to anyone with a serious interest in music and broadcasting. It did leave me wondering why British radio has not attracted much in the way of research.

For example, I would like to learn more about South Asian stations in the UK and their role in the Indian community.

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CS-R6 cloning software for IC-R6	£34.99
SP-27 clear acoustic earpiece.....	£24.95
BC-223 rapid charger for IC-R30	£59.95
BP-287 hi capacity 3280 mAh replacement battery for IC-R30.....	£74.95
BP-293 dry cell case (3x AA) for IC-R30	£34.99
CS-R30 programming software for IC-R30.....	£59.95
LC-189 soft case for IC-R30.....	£24.95
CS-R8600 software for IC-R8600.....	£69.95
RS-R8600 remote control software for IC-R8600.....	£99.95
RC-28 remote control system for IC-R8600.....	£279.95
SP-38 desk top speaker for IC-R8600.....	£149.95
SP-39AD external speaker with DC power supply for IC-R8600	£199.99
AH-8000 100-3300 MHz professional discone receiving antenna..	£209.95

Uniden



650 WATTS

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UBCD-3600XLT (NXDN Version) 25-1300 MHz Digital & Analogue scanner	£479.99
SDS-100 Advanced 25-1300 MHz Digital & Analogue scanner.....	£589.95

Mobile/Base

UCB-355CLT 25-960 MHz 300 channel analogue scanner	£89.99
UBC-370CLT 25-960 MHz 500 channel analogue scanner	£119.95
BCT-15X GPS enabled 25-1300 MHz 9000 channel analogue scanner	£249.95
SDS-200E Activated DMR+NXDN+ProVoice 25-1300 MHz Digital & Analogue.....	£749.99

Accessories

UBCD3600XLT soft leather case.....	£29.95
UBC-125/75 soft leather case.....	£24.95
ARC-536 pro software for UBCD-3600XLT	£49.99
ARC-536 basic software for UBCD-3600XLT	£29.99
ARC-370 software for UBC-370CLT	£24.95

WHISTLER



400 WATTS

The Whistlers Scanners are USA designed and built to last - The TRX-1 & TRX-2 are our best-selling digital versions with sales 10-1 against any other brand. We have worked with Whistler to customise a UK band plan for these scanners! This ensures the radios cover UK bands in the correct steps and the correct mode. When a user does a service scan it will search in the correct steps for the selected band ensuring maximum received stations.



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WS1010 25-512MHz 200 channel analogue scanner	£89.95
WS1040 25-1300 MHz storage for 1800 frequencies analogue scanner.....	£299.95
TRX-1E 25-1300 MHz best-selling Digital & Analogue scanner	£419.95

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MRW-TRX3 Triple hand held replacement antenna pack to increase performance	£39.95
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100 WATTS

NE510-2 MK4 Noise Eliminating Speaker replaces the MK3 version and removes unwanted background noise, hiss, hash, QRM, QRN, computer hash, plasma TV interference, white noise etc from speech, so that you can hear more clearly and listen stress free. Works across all radio bands and is also suitable for shortwave listening and for use in radio base stations.

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Based in Japan, Diamond Antenna manufactures a wide range of antennas and accessories for both hobby radio and commercial use. They are well known products that meet the highest standards in quality.



100 WATTS

Scanner Antennas

D777 is a VHF/UHF civilian and Military air band receiving antenna. It has a gain of 3.4dB on VHF (120MHz) and 5.5 dB UHF (300MHz) with a length of 1.7m and SO239 socket for easy connection	£64.99
D-190 is a high performance wideband discone antenna covering 100-1500 MHz including 10m RG58 terminated in PL259	£99.95
D-130M is a Discone antenna with wide frequency coverage on receive 25 to 1300MHz and covers 6m (20W) and 2m (200W) when used with a transmitter. This model is supplied with 15m RG58A/U and 2 x PL259 plugs	£129.95

FlightAware Live Flight Tracking



25 WATTS

FlightAware has revolutionized the world of USB SDR ADS-B Receivers with the FlightAware Pro Stick and Pro Stick Plus, high-performance USB R820T2 software defined radios (SDR) with a built-in RF amp for maximum ADS-B/MLAT performance. The first of its kind, FlightAware's Pro Stick is compatible with PiAware or any other device that supports USB RTLSDR receivers, and is less expensive than any other RTLSDR USB receiver in the world. The Pro Stick Plus adds a built-in 1090 MHz bandpass filter for increased performance and range of reception in areas with moderate RF noise as is typically experienced in most urban areas.

Flightaware Prostick Plus	£29.99
Flightaware Prostick	£24.95
FlightAware ADSB 1090MHz Band-pass SMA Filter.....	£17.99



Airspy is a line of super popular Software-Defined Radio (SDR) receivers developed to achieve high performance at an affordable price using innovative combinations of DSP and RF techniques. The goal is to satisfy the most demanding telecommunications professionals and radio enthusiasts while being a serious alternative to both cost sensitive and higher end receivers. Airspy Radios feature world class reception quality and ease of use thanks to the tight integration with the de facto standard free SDR# software for signal acquisition, analysis and demodulation.

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- Spyverter R2** extend your AIRSPY coverage **£59.99**
- NEW YouLOOP indoor HF Antenna** 0.5-52MHz **£29.99**

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Tecsun is a world famous manufacturer of AM, FM and shortwave radios. They offer a great range of portable options from just £44.95



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- PL-880** is the flagship portable radio fitted with analogue Hi-IF circuit, multi conversion, & DSP decoding technology, which greatly enhances the sensitivity, selectivity and reduces interference from close by stations. Covering FM 87-108 MHz, SW 1.711 – 29.999 MHz, MW 522 – 1620 kHz, LW 100 – 519 kHz..... **£189.95**

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- MFJ-1026** This unit is designed to eliminate local electrical noise even before it reaches the antenna socket of the receiver – it covers 1.8-30MHz – great just to only here the wanted signal in the clear. **£279.95**



The Bonito brand defines over 38 years of reliable software in the field of worldwide weather data reception on board and of course Ham radio. Bonito is one of the leading software manufacturers for receiving weather information via shortwave radio, such as WeatherFax, Navtext, RTTY, CW and Synop as well as Satellite Fax Images from NOAA, Goes, ESA / EUMETSAT Meteosat. As well in Ham radio Software, SDR-Receiver and active Antennas and many more ham radio and DXer products.

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- MA305FT** MegActiv 9 kHz -300 MHz portable (30cm length) active wideband antenna..... **£179.95**
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- GA3005** GigActiv 9 kHz-3000 MHz portable (19cm length) active wideband antenna..... **£379.95**
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- MD3000X** Mega Dipole 9 kHz-180 MHz active wire antenna..... **£389.95**

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- ERW-8** USB Interface cable for DJ-X11 scanner..... **£39.95**
- ESC-50** soft case for DJ-X11 scanner..... **£23.95**
- EBP-74** replacement 1800mAh battery for DJ-X11 **£34.95**
- EDH-36** spare dry cell case for DJ-x11 **£17.95**
- EME-26** curly cord earphone..... **£10.95**
- EME-6** straight cord earphone **£10.95**
- EPB-54N** high power battery for DJ-x3..... **£29.95**
- EDC-105** drop in charger for DJ-X3..... **£14.95**
- EDC-43** DC power cable for DJ-X3..... **£14.99**
- EDC-37** 12v DC cable for Alinco scanners..... **£9.95**
- EDS-17** remote head fitting for DX-SR8 **£49.95**



The people behind SDRplay are a small group of engineers based in the UK with strong connections to the UK Wireless Chip Industry. They have both software and hardware expertise and the RSP was designed by them here in the UK.

- RSPDUO** is a dual-tuner wideband full featured 14-bit SDR which covers the entire RF spectrum from 1kHz to 2GHz giving 10MHz of spectrum visibility **£239.99**
- RSPDX** covers all frequencies from 1kHz through VLF, LF, MW, HF, VHF, UHF and L-band to 2GHz, with no gaps **£194.95**
- RSP-1A** it is a powerful wideband full featured 14-bit SDR which covers the RF spectrum from 1kHz to 2GHz. All it needs is a PC and an antenna to provide excellent communications receiver functionality..... **£99.95**



AOR, LTD is a renowned Japanese communications equipment manufacturer established in 1978, headquartered in Tokyo, Japan, serves the monitoring enthusiasts, communication professionals, amateur radio operators and electronics industries throughout the world

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- AR-8200MK3** super wide band 100 kHz-3000 MHz 1000 channels analogue scanner **£459.95**
- AR-8200D** same as AR-8200-MKIII with the following added features. *APCO25 Decoding *Voice Recording * MicroSD Card Slot * 4GB MicroSD card Included * USB Port * CTCSS built-in * Voice Inversion built-in **£669.95**
- AR-DV10** 100 kHz-1300 MHz Digital scanner with TETRA DMR, NXDN, dPMR, APCO25, D-STAR **£939.95**

Mobile/Base

- AR-8600** MKII 100 kHz-3000 MHz all mode analogue scanner **£649.95**
- AR-DV1** 100 kHz -1300MHz Multi mode digital base scanner **£1199.00**
- AR-5700D** 9 kHz – 3700 MHz Advanced digital communications receiver **£4595.00**

Accessories

- DA-3200** 25-3000 MHz professional discone antenna **£169.95**
- DA-5000** 700-3000 MHz professional compact discone antenna..... **£269.95**
- LA-400** 10kHz – 500 MHz Magnetic receiving loop **£399.95**



We were established in 1978 and are the largest manufacturer of Amateur, CB and Scanner antennas and accessories in the UK.

Scanner Antennas

SKYSCAN MOBILE is a great all-round scanning antenna, which should enhance the reception capability of any radio scanner. Each of the nest of four different length antenna that make up the Sky Scan are designed to pick up a specific frequency range, this method has proven to work extremely well and delivers great results over 25-2000 MHz **£24.95**



MRW-125 Super Gainer Scanner Handheld Antenna Designed to improve weak signals of the Uniden UBC-125XLT. Massive 52cm long helping to pick out those long distance aircraft..... **£24.95**

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Scott Caldwell

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O September 1st, 1985, the wreck of the *RMS Titanic* was located in the North Atlantic Ocean by a Franco-American expedition. The quest to salvage artefacts from the debris field that surrounds the wreck started almost simultaneously, and disagreement over the rights to the discovery photographs led to the breakdown of relations between the American WHOI (Woods Hole Oceanographic Institution) and the French *L'Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER)*.

<https://www.whoi.edu>

<https://wwz.ifremer.fr>

Dr Robert D. Ballard (WHOI), co-discoverer of the wreck (Fig. 1), after consulting the Smithsonian Institution, reversed his earlier opinion and advocated that the wreck of the *Titanic* should be left in peace. He now openly opposed any salvage operations.

<https://www.si.edu>

First Field Tests

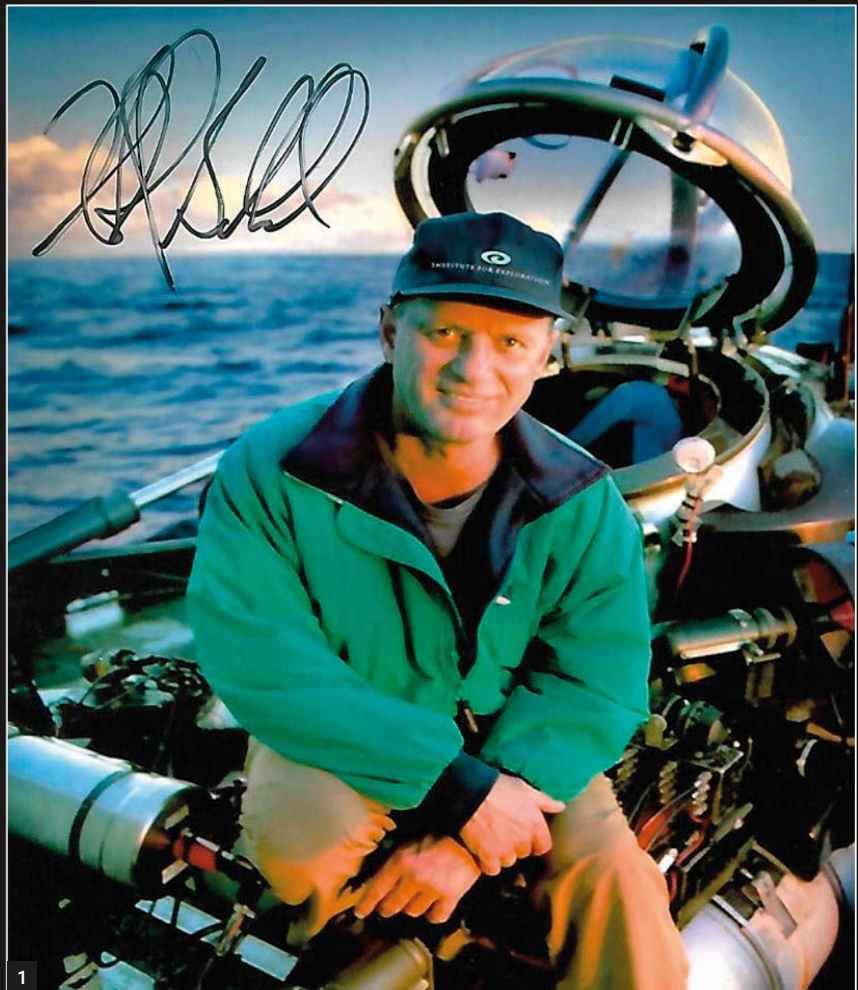
In July 1986, the WHOI returned to the wreck site and conducted initial field tests with a remotely-operated vehicle (ROV) known as *Jason Junior*. The operators publicly vowed not to disturb the wreck site, taking just photographs and leaving two memorial plaques.

Fig. 2 shows a wreck-model of the *Titanic's* bow section

In 1987, still bitter over the disagreements with WHOI, IFREMER, in partnership with private investors (a company initially named *Titanic Ventures* – later *RMS Titanic Inc.*), conducted a salvage expedition and recovered a total of 5,500 during subsequent expeditions.

Initially, they were forbidden from salvaging artefacts from inside the wreck, although they were awarded the status of 'salvor in possession'. They had to safeguard the wreck site and preserve the artefacts recovered from the debris field for public display.

However, a ruling by Judge Rebecca Beach Smith of the US District Court in Norfolk (Virginia) amended a 2000 court order, which prohibited the cutting into the *Titanic's* hull. Judge Smith concluded in her ruling that "*Recovering the wireless telegraph will contribute to the legacy left by*



1

Look, But Do Not Touch?

Scott Caldwell asked the salvor-in-possession of the *Titanic* (*RMS Titanic Inc.*) a series of pertinent questions about the recovery of the Marconi radio equipment from the wreck.

the indelible loss of the Titanic, those who survived, and those who gave their lives in the sinking".

The 2001 Expedition

An expedition in 2001, headed by James Cameron, entered the Marconi Room (Fig. 3) through the starboard side off the grand staircase, at the boat deck level. Initial

footage from the ROV indicated that not much remained of the Marconi Room, except corner pillars and various wires that protruded from above. The walls that enclosed the operators' sleeping quarters had completely disappeared.

The only visible object was a single rectangular structure that rose from the silt. The skylight that partially covered

GEORG WIESSALA (SCIENCE MUSEUM)

Fig. 1: Dr Robert D. Ballard, co-discoverer of the wreck of the *Titanic* in 1985. **Fig. 2:** 'Wreck-model' of the *Titanic's* bow section. **Fig. 3:** Reconstruction of a ship's radio room from the period around 1910, showing the telegraph equipment. **Fig. 4:** An early postcard, advertising the *RMS Titanic*.



the operator's office and sleeping quarters is gone, leaving a large rectangular hole in the roof. It is from this hole that RMS Titanic Inc. plans to enter the Marconi Room and commence salvage operations. The expedition has now been rescheduled for late spring/early summer of 2021.

The Marconi Company archives have no Titanic-specific information in its possession. A single photograph (double exposure) was taken by Father Browne on route to Queenstown, Ireland (Now named Cobh – Titanic's last port of call before crossing the Atlantic to New York). It represents the only known photograph of Titanic's Marconi apparatus.

The Silent Room

The 'Silent Room' is quite the opposite of the devastated Marconi Room. The entire transmitting apparatus of the wireless telegraph system has survived, and it is relatively intact and *in situ*, despite the violent sinking process and the extreme hydrodynamic pressure of the descent to the deep ocean floor. The main reason for its remarkable state of preservation is the presence of the thicker walls that contained asbestos insulation. This reduced the noise emitted from the spark discharger.

Previously, very little had been documented of the Silent Rooms on the *Olympic* and *Titanic* (The *Olympic* was the *Titanic's* slightly older sister ship). This fact was later used to support the salvage operations.

Only one known photograph exists of the *Olympic's* Silent Room that originated from the "spark era", and it documented only a small portion of the room. The disc discharger remains in its insulated teak box, with its lid in the 'locked-open' position. The ten-inch disc, with its unique sixteen discharger studs, can be identified between the two stationary electrodes that are sited on either side of the disc.

In 2005, a deep-sea crab had made the disc-discharger's box its home, supporting the argument for leaving it undisturbed. On the wall of the Silent Room, and directly above where the motor-generator was housed, the AC-DC double-panel switchboard was discovered in remarkable condition.

The glass on the four voltage and ampere gauges remained completely intact, with the

labels clearly visible: "NCS Volts" and "NCS Amperes" gleaming as if they appeared as new. The double-pole knife (field regulator) on the DC side of the switch is missing its ebonite handle, yet it is set to the off position.

This suggests that both the Marconi operators (John Philips 1887 – 1912 and Harold Bride 1890 – 1956) were attempting to adjust the spark to compensate for the failing power supply as the *Titanic* sank.

The Legal Position

The United Nations Educational, Scientific, and Cultural Organisation (UNESCO) 2001 *Convention on the Protection of the Underwater Cultural Heritage* applies to all traces of human existence having a cultural, historical, or archaeological character, and which have been underwater for at least 100 years.

Therefore, April 15th, 2012, marked the moment from which the *Titanic* wreckage is protected under the Convention. The US court is not disregarding UNESCO, but it is not legally bound by the requirements of UNESCO. Admiralty Law extends into international waters, authorising courts of competent jurisdiction to oversee salvage operations in international waters.

On May 5th, 2017, the *Consolidated Appropriations Act 2017* (Public Law 115-131) was signed into a statute. Section 113 of the Act implicitly states that "No person shall conduct any research, exploration, salvage, or other activity that would physically alter or disturb the wreck or wreck site of the RMS *Titanic* unless authorised by the Secretary of Commerce per the provisions of the Agreement Concerning the Shipwrecked Vessel RMS *Titanic*".

A recent agreement between the United Kingdom (UK) and the United States (US) designed at protecting and regulating access to the *Titanic* wreck site as has been advocated by Nusrat Ghani (UK Minister of Transport and Maritime): "Lying two and a half miles below the ocean surface, the RMS *Titanic* is the subject of the most documented maritime tragedy in history. This momentous agreement with the United States to preserve the wreck means it will be treated with the sensitivity and respect owed to the final resting place of more than 1,500 lives".

Salvage and Technological Challenges

The latest pertinent court ruling has granted permission for the date of the expedition to be changed, in light of the global Coronavirus (COVID-19) Pandemic: "The court grants RMS *Titanic Inc's* Motion to Amend the Opinion, as the requested change affects only the dates of the expedition, not the substantive ruling, RMS *Titanic Inc.* still must comply with the condition precedent set forth in the Opinion, namely filing, with the court and with NOAA a funding plan detailing the anticipated costs and funding sources of the recovery operation and the conservation of any recovered artefacts".

It is worth noting that, in the last few years, several international museum exhibitions have been organised around this issue, receiving near-universal praise from the public.

The firm *Magellan Limited* will assist in the extraction process by utilising a ladder deployment system enabling minimal disturbance to the remaining structure. The excavation of light sediment and overburden

will be conducted by utilisation of a variable flow electric dredge system to thoroughly expose points of interest.

There will be an additional option that will facilitate the removal of sediment and overburden to the surface, via a basket lift operation for detailed analysis and potential artefact recovery. To safeguard the wreck's integrity, and in adherence to the court ruling, *RMS Titanic Inc.* is required to surrender all imagery and sound recordings that document the recovery operation to NOAA.

Potential Damage and Deterioration

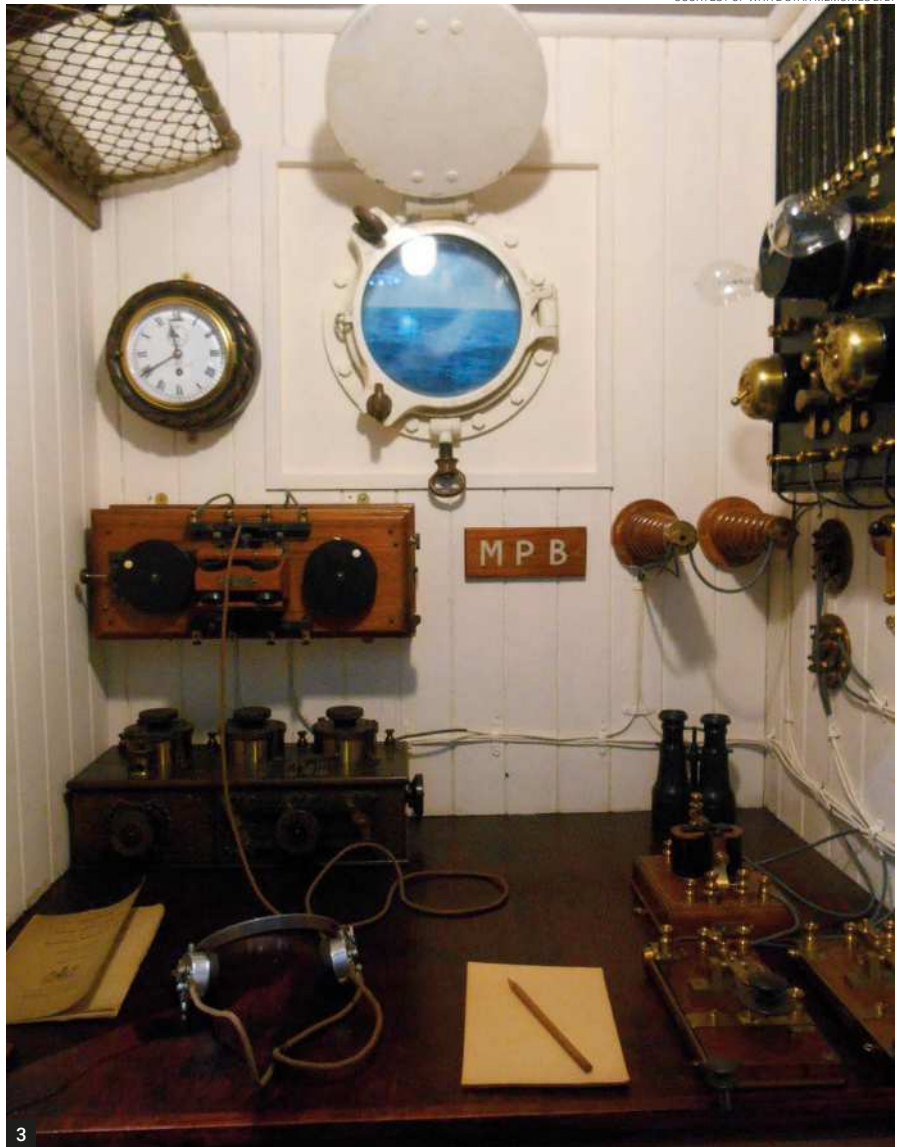
RMS Titanic stresses that this scheduled expedition is potentially the last opportunity to salvage the historical Marconi radio equipment. In the course of recent expeditions, the data obtained indicated that the wreck has been subjected to serious deterioration.

In the legal documents issued to the US court, *RMS Titanic Inc.* has argued that final collapse would result in "potentially burying forever the remains of the world's most famous radio". The first order of the salvage work is to conduct a general video inspection and verify the structural integrity of the superstructure and identify any potential hazards, obstructions, or changes to the wreck since it was last observed/imaged. This will determine if it is safe to commence excavation and recovery operations. ROV technology enables a panoramic view of the target area. Additional, close-up imaging will be provided by two Titan manipulator cameras with lighting deployed inside any existing open-access points.

Following investigation and data collection above the area selected for deck perforation, the company aims to perforate the sub-deck plating, or facilitate entry through the Marconi skylight opening, to limit any damage. After clearance of any remaining overburden, the ROV will penetrate the wreck from the starboard side facing and operating towards the port side and will determine the appropriate tooling and any necessary subsea rigging required to extract the primary and secondary targets (the motor-generator and disc-discharger).

The latter will be collected and transported to a previously deployed subsea basket that will safely lift the salvaged artefacts, 2.5 miles to the surface.

RMS Titanic Inc. President Bretton Hunchak concluded that, "The radio recovery mission would be limited in scope and undertaken in an effort to protect the important artefact before it's too late. It is not some kind of



Trojan horse so that we can start grabbing suitcases full of diamonds from the wreck. This is careful, surgical operation to rescue a historically significant item so it can teach future generations about the study of Titanic".

To answer the first question, below, I requested the assistance of leading maritime archaeologist and historian, Dr James Delgado. I have attempted to answer the remaining questions using my 37-year obsession with the *Titanic*, and much additional research.

Remaining Questions

To gain some deeper professional insight to the salvage operation I asked the questions listed in Table 1 to Dr James Delgado a leading maritime archaeologist and historian.

What follows is an edited summary of his replies:

Marine archaeologists and other cultural

professionals are concerned by the planned recovery of *Titanic's* Marconi equipment. Since the first salvage expedition in 1987, a storm of controversy has followed the operations of *RMS Titanic Inc.*

In 1987, the *London Daily Express* called the recovery dives "Vandalism for Profit".

NOAA advocates a *look-but-do-not-touch* methodology when exploring the *Titanic* wreck site. Jeremy Weirich of NOAA remarked during the 2004 expedition that, "There's not a lot of historical or archaeological knowledge we could get from *Titanic*. But there is a heck of a lot to learn about science. *Titanic* is a great testbed for analysing shipwrecks".

NOAA has claimed that *RMS Titanic Inc.* requires legal authorisation from the Secretary of Commerce under the jurisdiction of the *International Titanic Agreement*, under which operations at the wreck site are

Selected Reading

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- Lynch, D. and Marschall, K. (2003) *Ghosts of the Abyss*. Hodder & Stoughton: London.
- Science Museum London: *Titanic, Marconi, and the Wireless Telegraph*:
<https://tinyurl.com/vkg9xph>

- Why does NOAA oppose the salvage of the Marconi equipment?
- Does the act of salvage take away the historical context of the artefacts? It is better to view them in-situ?
- Is there anything new to be learned from the salvaged Marconi equipment?
- What are the plans for the Marconi equipment if/when it is salvaged, in terms of conserving and curating it?

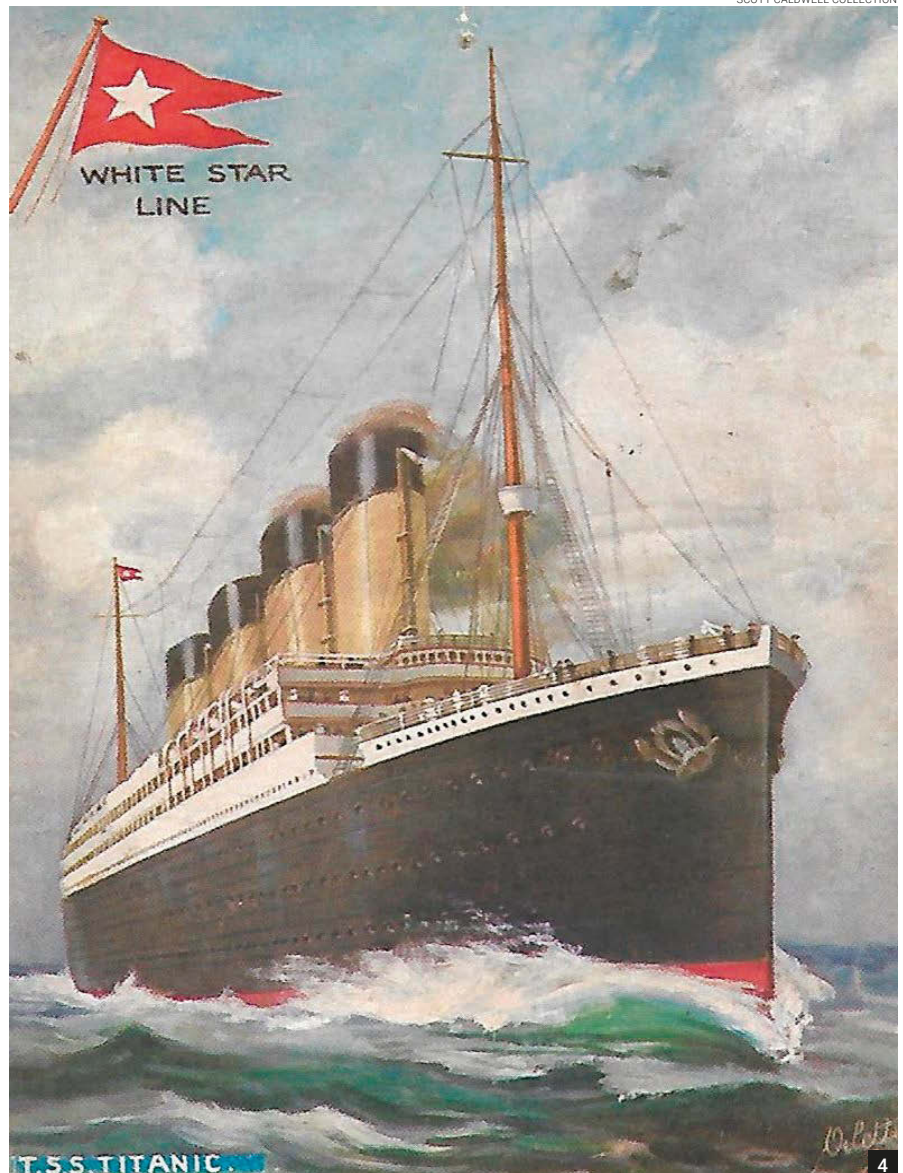
Table 1: Key Questions on the Recovery of the Marconi Radio Equipment from the RMS Titanic:

regulated by the US and the UK. Therefore, the hull, other artefacts and human remains are not disturbed.

RMS Titanic Inc. reports that, "It regrets that its relationship with NOAA has become increasingly adversarial, but it believes that NOAA is overreaching and attempting to expand the standards that it applies to its activities". In their legal filing, *RMS Titanic Inc.* contends, "This court and only this court has the constitutional jurisdiction to provide oversight".

Renowned *Titanic* historian and artist Ken Marschall after reviewing film footage from the Cameron expeditions concluded that "No definitive examination of the Marconi antenna roof connection is now possible because so much submarine activity has pretty much scoured and scraped the area, a popular landing spot over the years. I saw no landmarks, no sign of the fittings and vent that were there when the wreck was first photographed by the camera platform ANGUS in 1985".

Titanic historian Parks Stephenson has



collaborated with various wireless telegraphy enthusiast clubs and museums to determine the feasibility of restoring *Titanic's* Marconi transmitter, subject to its initial recovery.

The motor-generator and disc-discharger are sited on a single bedplate in the Silent Room. This represents the operating heart of the Marconi apparatus. The disc-discharger is a significant artefact that gave *Titanic's* wireless its unique musical tone, which was far superior to any other afloat at the time of her maiden voyage.

RMS Titanic Inc. argues that the Marconi motor-generator and disc-discharger should be recovered at the earliest opportunity, so that future generations will possess a tangible link to history: *Titanic*, as it was in April 1912. *RMS Titanic Inc.* aims to attempt to restore the disc-discharger to an operating condition so that the public will be able to

hear *Titanic's* unique voice once again. A similar approach was undertaken with the *Titanic's* steam whistles to a great public response.

Conclusion

The question of the salvage of radio equipment from the wreck of the *Titanic*, naturally, a very emotive and passionate subject. In this column, I have attempted to provide a balanced overview that, I trust, goes some way towards addressing both sides of the current debate.

I leave the reader to make their own judgement based on a deeper understanding. In the words of the famous author, Walter Lord "The legend of the *Titanic* lives' on!"

My thanks go to Dr James Delgado, for the valuable information provided in connection with the writing of this article.

Robert Connolly
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Some years ago, I wrote an article on the wider history of navigation systems for this magazine (*RadioUser*, June 2015: 48-52). In it, I examined those radio navigation systems that were no longer with us, including *Loran*, *Shoran*, *Consol*, *Decca*, and especially maritime Non-Directional Beacons (NDBs).

In some ways, this is a follow up to that article, based on some more historical research, and on information about NDBs that I have subsequently come across.

Once again, some of these systems are no longer active, while others were adapted for other uses; for example, many marine NDBs became Differential GPS (DGPS) correction stations, using the same transmitter technology as the former NDBs located at those particular sites.

At present, even some DGPS correction stations are closing down, for example in the United States of America, Iceland, and more recently Japan, due to enhancements in satellite navigation systems.

The Early Days

In 1925/6, before radio navigation aids became available to general aviation, a system of physical ground markers was constructed across the United States, from east to west. These consisted of large concrete arrows spaced between 20 and 30 miles apart to indicate the route that the new trans-continental air-mail service pilots could take. Concrete arrows constructed on the ground are fine during daylight and good visibility but of course could not be seen during darkness.

The system then was supplemented with light beacons mounted on towers at many of these ground arrow locations and was referred to as 'Airway Beacons'. The beam from a 1KW light beacon was a high-intensity line of light of approximately 5° beamwidth; it was visible for 20 to 40 miles in clear weather. The light was aimed at 1.5° above the horizon, and a small percentage of the beacon's light was reflected upward to provide close-range visibility.

Two 500W searchlights, called 'course lights', were mounted on the tower just



Concrete Arrows, Course Lights, and Navigation Beacons

Robert Connolly sheds some light on the long and fascinating history of navigational beacons and navigation aids in their historical contexts, varieties and functions, and with particular regard to Northern Ireland.

below the searchlight with one pointing forward along the 'airway', and the other pointing backwards. This gave resulted in a 15° horizontal beamwidth. The course lights were fitted with either red or green lenses. Every third beacon had green course lights, signifying that it is on an intermediate landing field. Therefore, pilots knew the availability of landing fields at a long-range. This was, of course, the forerunner to the airport rotating-light beacons, which alternately flashed green and white in a similar fashion to a maritime lighthouse for shipping.

Northern Ireland

In Northern Ireland, Belfast Aldergrove was equipped with one of these rotating airfield light beacons that flashed green and white. When it was decommissioned in the 1970s, it was transferred to a small flying club airfield at Newtownards. Dublin was also equipped with such a beacon; flying at 13,000 feet both were visible from over the Isle of Man on a clear night.

Some airfield light beacons are still used today at some airports around the world, including in the Republic of Ireland.

All other beacons had red course lights.

As the beacon light mechanism revolved and the clear flash of the beacon passed from the pilot's vision, the red or green flash of the course light came into view. Course lights flashed coded 'dot-dash' signals to indicate the beacon's position on the airway. Code signals ran from 0 to 9; thus, if a pilot received a signal for the number 4, he knew he was flying over the fourth beacon of a particular 100-mile stretch of the airway.

Developments in Radio Navigation

As commercial schedule passenger aviation grew in the early 1930s, a radio navigation system was created to aid landings during poorer weather conditions and at night. Several European airports, including Croydon in the UK, adopted the German-designed Lorenz radio navigation system, which preceded the current Instrument Landing System (ILS) that is used at airports worldwide today.

This short-range system operated on 30MHz and used a 1150Hz modulated carrier, fed to an aerial.

Reflectors on either side of the antenna were keyed, one for a period of 7/8 of a second, and the other one for 1/8 of a second, giving Morse letter E (.) and T (-) signals. As a result, two distinctive field patterns were produced in the horizontal plane. Along the axis at right angles to the aerials, the 'dot' and 'dash' field patterns overlapped, and the signals merged into a continuous tone to form the beam.

Around that same time, the Americans favoured a different system. It was referred to as the Medium Frequency (MF) Radio Range. I described this system in my column for December 2012 (*RadioUser*, December 2012: 50-52).

During and after the Second World War period, the Americans operated two of these Radio Range Systems in Northern Ireland – one for flying boats to land on Lough Erne, and the other one at their main airfield situated at Langford Lodge, not far from the current Belfast International airport.

Radio Non-Directional Beacons

Radio Non-Directional Beacons (NDBs) for civilian use were initially used by shipping to improve their navigation and plot their position using fairly complicated tables.

This was an important development for ships that relied on taking sextant observations several times a day. Using



Fig. 1: A US concrete direction arrow.

Fig.2: An airway direction light; one of many used for daylight aircraft navigation across the USA in the 1920s. Fig. 3: A modern example of an airway direction light. Fig. 4: The Learadio aircraft receiver.

a sextant was fine when the sun or stars were visible but often an accurate position could not be plotted due to the sky being obscured by cloud cover preventing the use of the sextant.

Therefore, radio transmitters were installed on many light-houses in the frequency range of 150 – 400 kHz or 520 – 1720 kHz incorporating the station's identifier in Morse code that was used to confirm the station's identity. Using Radio Direction Finding (RDF) with two or more different NDBs, it was possible to plot your position with reasonable accuracy by transferring the bearings from each beacon onto a chart; where the bearing lines crossed, that was your position.

In Ireland, the first marine Radio Non Directional beacon was installed and put into operation on 1 January 1931 at Mizen Head, for £10,017 (the equivalent to £477,075 today). This was followed by the installation of several other NDBs in other lighthouse locations.

A few years later, NDBs were installed at various locations across the country, and major airfields began to provide a similar service for aircraft. I believe the first aeronautical NDB installed in Britain was at Croydon airport around 1935.

World War Two and After

Following the outbreak of World War II, all civilian NDBs in the UK were closed



down so that they could not be used by the enemy for navigation. Neutral Ireland also closed most of its marine NDBs; officially they were all closed down but I learned that at least one, located on Tory Island, remained operational throughout the war period and was often used by ferry pilots who flew military aircraft across the Atlantic into the UK.

The RAF also installed a powerful NDB almost on the border between Northern Ireland and Eire at Derrynacross transmitting the callsign UU7 that was also used by transatlantic ferry pilots.

Recently I was reading about the role Éire played in WW2 and came across a reference to wartime RAF manuals that stated Radio Direction Finding (RDF) must be used with caution in case the enemy was interfering with signals.

After the Americans joined the war effort, many military aircraft were flown across the Atlantic for the various new airbases the USA had acquired in Britain. The majority of these were making landfall on the coast of Éire after virtually navigating by dead reckoning across the northern Atlantic Ocean.

Also, passenger-carrying flying boats were now crossing the ocean for landing

Further Reading

- Bennett, L. (2020): *Portishead Radio: A Friendly Voice on Many a Dark Night* (New Generation Publishing)
- (reviewed in *RadioUser*, August 2020: 16)
- <https://tinyurl.com/yyrp9bu9>
- <https://tinyurl.com/yxunruga>
- <http://www.trevord.com/nav aids>
- <https://tinyurl.com/y4o6pxe7>
- <https://tinyurl.com/yxdzbdst>
- <https://tinyurl.com/yyx4mlvy>
- <https://tinyurl.com/y6y3b8ro>
- <https://tinyurl.com/y2ngzvd9>
- <https://tinyurl.com/y3nv3z2o>
- www.faa.gov/about/history/timeline/
- www.kilkeel.org.uk
- <https://tinyurl.com/y4re9wec>
- <https://tinyurl.com/y4qtkdirp>
- <https://tinyurl.com/yybhw722>
- <https://tinyurl.com/y26clb2z>
- www.udxf.nl/Radio-Navigation-Signals.pdf

Fig. 5: an example of an NDB aerial.

Fig. 6: This is another type of NDB aerial.

Fig. 7: A marine RDF aerial. Fig. 8: An airway course light. Fig. 9: A portable NDB Radio Direction-Finding (RDF) receiver.

Fig. 10: A typical 1945 US air marker layout.

at Foynes, on the Shannon estuary in the Republic of Ireland. They also made use of the limited radio navigational aids available at the time. It would seem that Éire did not have any aero NDBs. Most of their restricted number of marine NDBs were switched off, except for Tory Island in the Atlantic west of Éire.

A marine NDB was located on Eagle Island (GL 308kHz); this too may have remained operational, but I have seen nothing to confirm or deny this. The Tory Island marine NDB (TY 308kHz) was used by aircrews to help fix their position on landfall along with a beacon in Gander, Newfoundland, and a radio range facility at Prestwick, Scotland. Besides, an NDB located just over the border in Northern Ireland at Derrynacross (close to Lough Erne, and transmitting as 'UU7') was deployed to help military flying boats locate the Lough Erne RAF flying boat base at Castle Archdale, Co. Fermanagh.

Accidents

Throughout World War Two, there were many accidents involving aircraft (civil and military) that crashed into high mountains located in the southwest corner of Éire while trying to land at the Foynes flying boat base. A notable disaster occurred in



1944, when a BOAC flying boat, again while trying to land at Foynes in poor visibility, crashed in these mountains.

The authorities in Éire subsequently decided to place radio marker beacons on the mountains concerned. Six were planned but only four were constructed, costing £50 (£1,550 in today's value) each. It seems that there are very few details recorded on these other than a civil air notification. However, it is believed that they transmitted either a slow "S" or fast "H" in Morse on 3082.5kHz, followed by 11 seconds of silence.

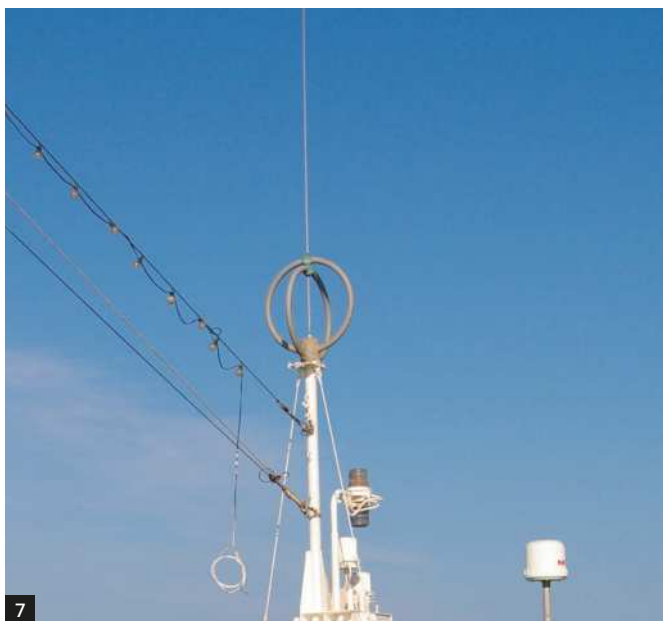
The beacons were activated on the 22nd of February 1945 and remained operational until the 18th of September that year, when

improved navigational systems became available at, the (then new) Shannon airport. They were located at Mount Brandon, Sleah Head, Bray Head (Valentia), and Bolus Head.

Chain Reaction

Marine NDBs were subsequently organised into 'chains', usually consisting of six different NDBs per chain. Each transmitter had a ten-second slot and sent its callsign three times, followed by approximately 7 seconds of tone, followed by another identification transmission, before the next beacon in the chain would start to transmit.

The purpose of these chains was to



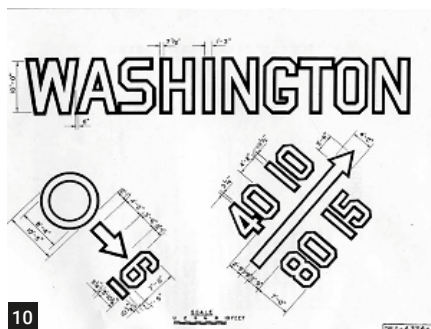
7



8



9



10

reduce the number of frequency changes involved by ships taking RDF bearings to plot their position. While they were marked on aeronautical charts, usage by aircraft was not recommended, due to aircraft travelling much faster than ships. Aeronautical NDBs near coastlines were marked on marine charts and could be used by shipping if required.

Some NDBs were approved for both marine and aeronautical use and described as Aeromarine NDBs. An example of one of these that is still operational is OZN 372.0 kHz, Prins Christian Sund in Greenland.

The chains of marine NDBs were closed in the 1990s with many of them shut down. The transmission format of the remaining NDBs was changed and remained operational until the year 2000 when they also closed. Some had been converted for use as Differential GPS correction stations

(DGPS) transmitting correction data but, as I mentioned at the beginning of this article, some of these are also now being closed.

Enroute Beacons and the Future

In the aviation world, NDBs came as not just en-route navigation aids but also as part of an airfield's Instrument Landing System (ILS). Many airfields also used their local NDBs not only as an aid to finding a runway but also as an aid for aircraft holding patterns.

In recent years, we have seen the closure of a substantial number of en-route and airfield NDBs although many airfields still retain at least one beacon as part of their instrument landing system. Enroute beacons were much more powerful compared with airfield NDBs. An airfield NDB would have a published operational range of between five to ten nautical miles, whereas an en-route beacon would have had an increased transmitter power to provide a range of between 50 to 200 nautical miles.

Enroute- and many airfield NDBs are being phased out as they are now

deemed to be well past their 'sell-by-date'. However, rather than all being purchased by the scrap man, a few are being moth-balled so that if for some reason current radio navigation sources fail, these can then be quickly re-activated to help keep aircraft on the move.

Some marine NDBs remain operational as marine radio navigation aids in the Russian Arctic region and the Black Sea, while a few other have been re-assigned for aeronautical use, for example in Tunisia. There is an old saying, "as one door closes another one opens". This would appear to be true in the world of NDBs.

Despite the decline in the use of these beacons in the aviation and maritime navigation fields, we are seeing more and more NDBs becoming operational on off-shore structures, such as drilling platforms, and on specialist ships involved in the oil and windfarm industries, as these are equipped with helicopter landing pads to enable crew changes while at sea.

As a result of this relatively new use of older technology, I cannot see a point in the future where NDBs have gone the same way as the early hyperbolic radio navigation systems of the past (for example, *Consol* or *Decca*).

The images in this article (Figs. 1-10) are included to illustrate a wide range of beacon-related transmitters and receivers, aerials, course lights, and similar navigational aids.

[Robert Connolly's indispensable list of *Non-Directional Beacons - Arctic to Equator* is here]:

<https://www.kilkeel.org.uk/publicat.htm>

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Robert Connolly explores the use and functions of maritime voyage data recorders, looks at EPIRBS, MF/F Voice Communications and SAR Channels, and reports on a lighthouse NHS tribute in blue.

You are probably aware of aircraft 'black boxes', in the form of a flight data recorder and cockpit voice recorder. These devices log various aspects of the aircraft flight, including engine performance, climb and descent rates, control surfaces and so on, along with all the cockpit sounds, including radio communications, alarms, and interaction between the crew.

All this information is of tremendous use to accident investigators to help determine the cause of an accident when one occurs. Incidentally, 'black' boxes are not black, they are a fluorescent orange colour to make them easily identifiable.

Now, I wonder just how many of you are aware that commercial ships are equipped with a similar black box data and bridge voice recording system? In this month's column, I will provide an outline on the marine black box monitoring system.

Accidents Can Happen

Accidents can and do happen at sea. These may range from a vessel sinking, running aground, being involved in a collision with another vessel or making a navigation error that may have put the vessel, or another vessel, in danger. Passenger ships and other ships of 3,000 Gross Tonnage and above, and which have been built on or after 1 July 2002, must carry a Voyage Data Recorders (VDRs) to assist in accident investigations. The relevant regulations were adopted in 2000 and entered into force on 1 July 2002.

A Voyage Data Recorder (VDR) is a data recording system designed for all vessels that have to comply with the International Maritime Organisation (IMO) International Safety of Life at Sea (SOLAS) Convention (IMO Res.A.861(20)) to collect data from various sensors onboard the vessel.

The data is digitised, compressed and stored in an externally-mounted protective unit which is tamper-proof and designed to withstand the extreme shock, impact, pressure, heat and fire that may be caused by an explosion, collision, or sinking.

The storage unit may be a fixed unit that can be retrieved after an accident or a float-

The Marine Black-Box Monitoring System



free device. The VDR records the last 12 hours of data (48 hours for the 2014 regulations MSC.333(90)) that can be replayed by the authorities or ship owners for incident investigation.

The newer MSC.333(90) regulations state a minimum of 30 days of recorded data must be held internally.

Multipurpose Devices

Although designed for incident investigation, the VDR data may also be used for preventive maintenance, vessel performance, heavy weather damage analysis and training purposes. Data from the VDR is easily transferable to a computer or laptop for investigation. The ownership of the data remains with the vessel's proprietor, but the information must be made available quickly to the authorities in the event of an incident.

If you ever get the chance to visit a ship's bridge, perhaps while on a cruise, you will notice several things. There is the main navigation control unit, located in the centre of the bridge. It is equipped with the auto-pilot, radar and AIS display, engine controls, NAVTEX

receiver and VHF and HF radio transceivers.

There will also be two smaller control units on either side of the bridge (on the bridge 'wings'). These are used for berthing and departures at the port. Incidentally, some bridge wings have glass floors allowing the captain to see directly below, to align the ship with berthing marks on the quayside. The ship's wheel is also on the main control unit and is duplicated on the smaller control units.

These days, and on modern ships, it is normally a small wheel, not the large wooden spoked wheel that you may have seen in films of old sailing ships. If by chance you happen to look up to the bridge ceiling you may notice microphones built into the ceiling at various locations across the bridge and bridge wings. These pick up all sound, voice and alarms, on the bridge all the time and this data is stored on the VDR in a similar way to the cockpit voice recorder of an aircraft.

A Wide Range of Recordings

Apart from recording voices on the bridge, other data the VDR records is as follows: the position of the vessel along with the date and time (UTC); speed on the water and speed over the ground; VHF radio communications audio; the vessel's course taken from the gyrocompass; data from the radar and AIS; depth of water under the keel taken from the depth sounder; all important IMO alarms that may activate; any watertight and watertight hull opening status; fire door status; engine and rudder data including responses; hull stresses and corresponding load/buoyancy curves; propeller and thruster data, including RPM values.

Sensors take the various readings required for the VDR, and they link into a data interface/collection unit. This then sends the data to the VDR, which constantly writes the data;

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after a while, time-expired data will be overwritten. To ensure that there is no failure of the VDR or its interface unit, it is powered by an uninterruptable power supply.

Certain vessels built before 2002 may have a simplified VDR (S-VDR) installed. The only difference between a VDR and S-VDR is the amount of data the unit is capable of storing as the S-VDR has fewer functions to monitor due to possible interface difficulties. Vessels that do not meet the requirements for the compulsory carriage of a VDR, for example, ocean-going yachts, may be equipped with a Light-VDR (L-VDR). Fig. 1 shows an example of a VDR.

Homing and EPIRB Beacons

VDRs are equipped with an acoustic homing beacon that operates on 37.5kHz providing a 10ms pulse transmission, with a maximum depth of 6,000 metres and an operating life of 90 days. Searching for, and subsequently recovering, a VDR from a sunken vessel can be, not only difficult and time-consuming, but also very expensive, especially if the vessel lies in deep ocean water.

As a result, under a revised 2014 regulation VRDs must now be able to save the last 48 hours of data for up to two years. Besides, ships must have an additional recording medium that will save data for six months.

This must be kept within a float-free capsule, which will automatically be released following the loss of a vessel. This is due to the high cost of trying to find and recover the main VDR following a vessel's sinking, and

where the crew has not removed the VDR or downloaded the data immediately after an incident.

The float-free device doubles as an Emergency Position Indicating Beacon (EPIRB). This is transmitting a 5W COSPAS SARSAT alert on 406MHz. The International COSPAS-SARSAT Programme is a satellite-aided search and rescue initiative. It is organized as a treaty-based, non-profit, intergovernmental cooperative of 45 nations and agencies.

The float-free equipment is also equipped with a 121.5MHz 40mW homing beacon, GPS positioning, high-visibility strobe light and a 64GB VDR memory capsule. The battery-powered unit is capable of transmitting for over 100 hours once activated. On activation, the device automatically disconnects from the VDR data cable to enable it to float to the surface.

MF/HF Voice Comms

One of the most common queries I receive is whether there is any remaining life on the marine MF/HF voice channels. The short answer is yes. Most of the MF/HF communications you will hear are from coast stations when they transmit their Maritime Safety Information (MSI).

I regularly receive MSI transmissions from various countries across the UK, Europe – and with suitable propagation from North America. On the MF band, apart from UK and Ireland MSI transmissions, I have received signals from Norway, France, Spain,

Fig. 1: An example of a maritime Voyage Data Recorder (VDR). Fig. 2: Haulbowline Lighthouse, beautifully illuminated. Fig. 3: Stena Precision (now operating as Seatruck Precision) on the Warrenpoint/Heysham freight route.

Denmark, Italy, and Portugal, along with several Canadian coast stations.

In addition to this, I have received various US Coast Guard stations transmitting their MSI, as well as Estonia, Netherlands, Bulgaria, Norway, Romania, Turkey, and even occasionally Hong Kong.

MSI transmissions happen a set times. In this context, a very useful resource for MF/HF schedules is available on William Hepburn's excellent website:

www.dxinfo.com

Using this guide, select the transmission time and frequency you want to try to hear. Several European and Asian stations transmit their MSI in both their languages and in English, in USB mode. In addition to the voice transmissions, there are also coast stations transmitting RTTY and Radiofax data signals.

You will, of course, require suitable software for your computer to decode these latter signals. Most decoding software these days uses your computer sound card for processing received signals. A good programme for decoding maritime data signals is *SeaTTY*; an updated version (2.60) has recently been released and is available from this URL:

www.dxsoft.com/en/products

This new version now includes PACTOR-1

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FEC mode support, along with some minor bug fixes.

DSC Monitoring

In addition to the data I have already mentioned, there is also Digital Selective Calling (DSC) available on MF and HF. The majority of traffic on DSC is in the form of test calls by vessels ensuring their communications equipment is working, as part of the regular checks that they are required to make.

DSC test calls normally receive an automatic acknowledgement from the coast station that has been called. Coast stations will normally transmit a DSC message alerting ships to their impending MSI voice transmission.

There are a few things you ought to remember when trying to receive MF/HF marine communications, especially voice transmissions.

First, marine MF/HF radio voice traffic is much quieter when you compare it with, for example, aviation HF voice communications. One reason for this is down to the fact that ships are not actually 'controlled' using MF/HF, unlike aircraft, which are required to make regular position reports while flying.

Second, a ship transmitting on MF/HF is much more difficult to hear because their antenna is only metres above sea-level, unlike aircraft that are several miles high. Also, their transmitter is not as powerful as the transmitter used by a coast station. As a result, their transmission range is much more limited making them more difficult to receive, particularly during daylight.

Search and Rescue on HF

The use of Search and Rescue (SAR) HF frequencies has declined in recent years, as other more advanced communications have come online. In the British Isles and Europe 5680kHz (5695kHz secondary) was the commonly-used SAR daylight frequency, with 3023kHz (3085kHz secondary) used during darkness.

The Canadian Coast Guard used 5717kHz and 6693kHz, while the US Coast Guard used 5696kHz and 8980kHz. Australia used 5696kHz and 9027kHz. Incidentally, in Ireland, the SAR frequencies of 5680kHz and 3023kHz are operated by *Shannon Aerradio*, which is the radio communications end of Shanwick Radio, from its location at Ballygirreen in Co. Clare, southwest Ireland.

<https://tinyurl.com/y6uebqsd>

The major marine MF/HF voice distress frequencies are as follows: 2182, 4125, and 6215kHz. Marine DSC distress frequencies are 2187.5, 4207.5, 6312, 8414.5, 12577,



and 16804.5kHz. Marine Narrow Band Direct Printing (NBDP) distress frequencies are 2174.5, 4177.5, 6268, 8376.5, 12520, and 16695kHz.

Now a few more interesting SAR frequencies: 2596kHz used by UK Coastguard and the RNLI for SAR, 8364kHz used by survival craft in SAR operations. SAR operations involving manned spacecraft: 10003, 14993 and 19993kHz. The NATO combined submarine distress frequency is 4340kHz.

Marine VHF Band

Regarding the marine VHF band, the distress and calling voice frequency is Channel 16 (156.800MHz) and DSC CH70 (156.525MHz). Channel 0 (156.000MHz) is a private channel used by the UK Coastguard and RNLI. Note that Irish Coast Guard helicopters are also now equipped with CH 0 for rescue tasks only within Northern Ireland that involve communications with Belfast Coast Guard. CH 06 (156.300MHz) may be used by SAR aircraft for communication with ships. CH 10 (156.500MHz), CH 67 (156.375MHz) and CH73 (156.675MHz) used by ship, aircraft and land stations involved in SAR operations. CH99 (160.600MHz) is a private channel for UK Coastguard use, normally used to communicate with their land-based search teams. The frequencies of 242.950 to 243.050MHz, and 282.800MHz, are in use for survival craft stations (with equipment used for survival purposes) and for SAR operations concerning manned space vehicles.

Haulbowline Lighthouse

Regular readers will recall of me previously mentioning the lighting of our local lighthouse, Haulbowline, at the entrance to Carlingford Lough, Co. Down (Fig. 2) during

Coast Guard Websites and Resources

- Canada: <https://www.ccg-gcc.gc.ca/index-eng.html>
- Germany: Küstenwache (Police): <https://tinyurl.com/yyjdd2l3>
- Historic England: Coastguard Stations (2012): <https://tinyurl.com/y2flre2n>
- IMO: Voyage Data Recorders: <https://tinyurl.com/y65gyukq>
- Ireland: <https://tinyurl.com/y43kdkby>
- Nancollas, T. (2019) *Seashaken Houses: A Lighthouse History from Eddystone to Fastnet* (Penguin)
- National Archives: Coastguard Records: <https://tinyurl.com/yyenzmga>
- Short History of HM Coastguard: <https://tinyurl.com/yy9jdhr>
- UK: <https://tinyurl.com/qjxuuv>
- USA: <https://www.uscg.mil>
- Wärtsilä Marine: <https://www.wartsila.com/marine>

August; something that has been happening for several years now. It is the only wave-washed lighthouse in the British Isles that gets illuminated.

This year, the colour blue was selected for the annual illumination as a tribute to all the front-line workers who have been involved in the Covid-19 pandemic.

I had planned to bring you a much closer picture of this year's event, however, unfortunately, the building was damaged by *Storm Ellen* a couple of days before the socially-distanced viewing cruise I was booked on. This month's photo (Fig. 3) is of *Stena Precision* now operating as *Seatruck Precision* on the Warrenpoint/Heysham freight route.

Co-block DAB, IBC 2020, and International DRM News

Kevin Ryan

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Kevin Ryan takes a closer look at the Ofcom small-scale DAB advertisement and shares news of DAB in the UK and Europe, as well as several noteworthy DRM developments world-wide.

Ofcom has now advertised the times for the first round of licensing to expand small-scale DAB across the UK, following a long-term trial of ten multiplexes. The areas and the DAB channels to be used are listed in Table 1.

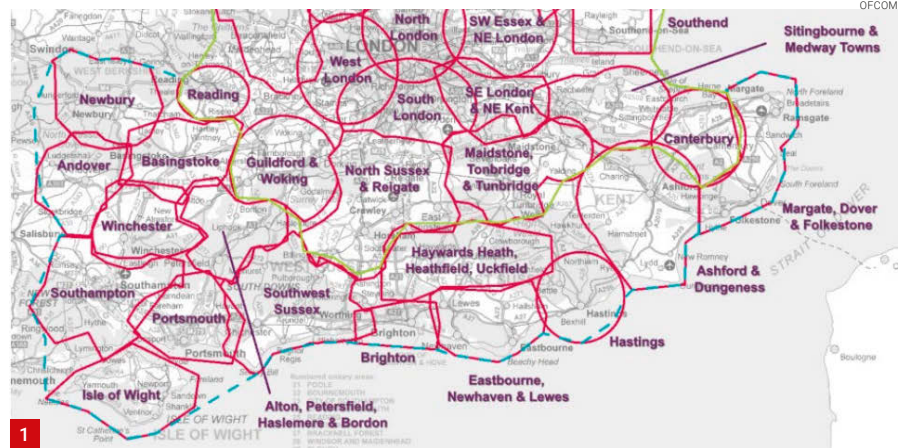
The closing date for applications, for both multiplex operators and community radio stations interested in being on DAB, is the 23rd of November. I expect there to be many applicants. I doubt Ofcom will decide before June 2021.

<https://tinyurl.com/yyxexfdt>

Each licence area has a detailed entry, including a coverage map listing the size of the licence area, the local DAB services that overlap the area and the other DAB licences nearby that will use the same channel. Each area has a section on 'co-blocks' listing those areas that will use the same DAB channel.

If I read the data correctly, the channel allocation for my area near Reading is 9C (Fig. 1). This is also used for Winchester, Guildford & Woking, and many others, further away but still in southern England. To the south of my location, the Basingstoke channel of 7D is also allocated for Witney, Oxford City, North Sussex and Reigate. Ofcom will control the amount of overspill. However, the chance to hear adjacent small-scale DAB multiplexes will be pretty limited.

The information on co-block DAB services is relevant because there are limits on the amount of signal strength that a small scale radio multiplex service can place into the licensed area of another radio multiplex service using the same frequency block. These signal strength limits are 38 dBµV/m in the case of other small-scale radio multiplex licensed areas, and 29 dBµV/m where local radio multiplex services use the same channel.



UK Car Radios

All radios fitted in new passenger cars will come with digital radio as standard from 2021, following parliamentary approval of *The Road Vehicles (Approval) Regulations 2020*. These came into force on 1st September 2020 and include provisions to implement Article 113 of the European Electronic Communications Code. This covers the compulsory installation of digital radios in passenger cars and buses that come fitted with a radio. The regulation specifies the choice of digital terrestrial radio broadcasting, rather than IP, and allows automotive manufacturers until 21 December 2020 to meet the requirement. The regulation does not apply to commercial vehicles, which amount to 5 million vehicles on the roads of the UK. As of Q2 2020, 79% of new commercial vehicles were fitted with DAB digital radio as standard, as were 94% of new cars.

UK DAB Changes

Ofcom publishes a monthly list of approved changes but it often takes another month before the changes filter down to what your radio has in its station list. In this context, Hits Pride Radio aimed at the LGBTQ+ community will be added to the Stoke on Trent, Swansea, London 1, Bradford & Huddersfield, Liverpool, Humberside, South Yorkshire and Northern Ireland multiplexes. Listeners in Swansea can now enjoy Magic Musicals; the Essex region has a new adult alternative music station aimed at 35- to 70- year olds, playing primarily mu-



sic of black origin including regional news and information.

Other areas are losing their local stations as more network services take over. Suffolk loses Town 102 and gets Greatest Hits Radio instead; North Yorkshire listeners now have *Hits Radio* and *Greatest Hits Radio* instead of Stray FM and Yorkshire Coast Radio. Radio Aire (Leeds Multiplex), KCFM (Humberside) and Trax FM for Doncaster (South Yorkshire) close down as the *Greatest Hits*, *Hits* and *Country Hits* brands spread across the UK. For example, The Breeze, Minster FM, Compass FM, Pulse 2, Signal 2, Swansea Sound and Eagle Radio will get transformed into *Greatest Hits* relays. As I write this, many of these displaced local services are already re-appearing as online stations.

DAB Luxembourg

Luxembourg, where Broadcast Centre Europe (BCE) and parent RTL have been at the forefront of adopting new technology, now lags behind many other countries in

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Fig. 1: In this small area, 7D and 9C will be used by many cities. **Fig. 2:** This public service broadcaster in Luxembourg will soon be on DAB, as well as on FM. **Fig. 3:** This is an interactive map of transmitter locations for different services (use with *Google Translate*). **Fig. 4:** The *Starwaves* receiver (right) is a new prototype DRM receiver; the others have appeared at other events. **Fig. 5:** The *Journaline* test was interesting but was not different from the way the BBCWS uses this feature. **Fig. 6:** talkRADIO is streaming video from its studio for several hours a day.

not having a DAB service. In 2018/2019 the BCE carried out test broadcasts on channel 7D (Band III, 194.064MHz) in Luxembourg, and the test signals easily reached into regions of neighbouring Germany and south-east Belgium. RTL has plans to start another trial DAB+ service carrying the eight local stations (Fig. 2) using the main FM transmitter sites at Hosingen and Dudelange with a 5kW and a 10kW transmitter, respectively.

Czech DAB

Czech Radio revealed its digital radio strategy at a press conference on 17th September 2020, including a significant expansion of DAB+ signal coverage to cover 95% of the population, and the planned termination of medium wave and long wave broadcasting ranges. Until 2021, Czech Radio expects to finance DAB+ from its own savings; from January 2022, it should be ensured by switching off medium and long wave. I found a useful transmitter map on Czech Radio's digital portal (Fig. 3) <https://portal.rozhlas.cz/vysilace#/>

DAB Germany

A second federal multiplex should be on the air by now with some new programme services like PROFI Radio for craftsmen and DIY enthusiasts and encompassing old favourites like RTL Radio. The multiplex operator is Antenne Deutschland who will supply six programme services but has not revealed what they are as yet. The network has 72 DAB+ transmitters covering 83% of the population. The first federal network used channel 5C but the second mainly uses 5D and 9B plus a few transmitters on 8C and 12D.

DRM on Mobiles

I have shared my lack of success in getting the Algor DRM apps from Korea working on my Android equipment although I have seen pictures of it working on Samsung mobiles. In the printed summary of the Q&A ses-

sion held after a DRM seminar on Distance Learning, one of the answers stated that the DRM Consortium had plans to make the Fraunhofer DRM Multimedia Player app widely available for about £3-5. The prices quoted were in Indian Rupees (₹), which makes me wonder if the app will only be available in India. It is all a bit academic because I do not think that DRM will ever be used on the FM band in the UK.

The Fraunhofer *DRM Multimedia Player Radio App* supports all the DRM features required for distance-learning, including an advanced WiFi-Hotspot option allowing multiple people to share a single DRM receiver through their devices running an HTML5-compliant (i.e. not Internet Explorer) web browser. The app runs on Windows, Linux, MacOS, Android tablets and phones, and the Raspberry Pi.

The other very interesting answer was that DRM for the FM band does not require any special chips to be implemented in mobile phones. The app uses the FM front-end receiver chips already available in many modern phones. *Journaline* can embed the images and that could be the alternative for the *Slideshow* feature. However, *Slideshow* is a *passive* service, where the broadcaster defines the sequence of slides and the time of update on the screen. It is not intended for detailed information (such as text) or on-demand information (such as structured weather forecasts, for example). For those who need on-demand access to information, *Journaline* would seem to be the more appropriate application.

IBC 2020

The DRM Consortium released a few details of its contribution to (the virtual) IBC 2020. The DRM consortium reported on DRM progress in places like India (more DRM MW transmitters announced but the website seems to refer to shipments in 2017), Indonesia, Pakistan, South Africa (with a digital strategy I covered last month, *RadioUser*, October 2020: 37-39) and Brazil issuing a tender for digital-capable transmitters on AM and FM.

DRM-compatible receivers were a main topic of the presentation. Gossell from China and India's Inntot promoted their ranges of receivers and the current solutions for standalone (and car) radios.

Starwaves highlighted the *Tuk-Tuk* receiver black box and launched its new portable receiver model W293BT (Fig. 4), which reportedly has excellent DRM reception on short wave. There is a video on YouTube that will give you an idea of what it looks



3



4



5

and sounds like.

<https://tinyurl.com/y6jqbl2j>

<https://www.ibt.org/ibtshowcase>

DRM in Indonesia

Indonesia, along with South Africa, is one of the countries with a crowded FM band. It is interested in inserting DRM multiplexes into any 100kHz gaps in the occupancy. The Indonesian Communications Ministry (Kominfo) and the public broadcaster, Radio Republik Indonesia (RRI), tested DRM on FM in West Java and the capital Jakarta. DRM was transmitted on several in-band frequencies to show there was no interference to analogue broadcasters, and also on 107.9 MHz to check the potential in-

Area	DAB Channel
Alnwick & Morpeth	8B
Basingstoke	7D
Bradford	9A
Cambridge	8B
Cardiff	10D
Clevedon, Avonmouth & Filton	12D
Derry/Londonderry	11C
Dudley & Stourbridge	9C
East Bristol & Keynsham	7D
Edinburgh	9B
Exeter	7D
Glasgow	8B
Inverclyde	9B
Isles of Scilly	8A
King's Lynn	9C
Leeds	8B
Newcastle & Gateshead	8A
N Birmingham	8A
Norwich	12A
Salisbury	9A
Sheffield & Rotherham	7D
S Birmingham	7D
Tynemouth & South Shields	9B
Welsh Valleys	9C
Winchester	9C

Table 1: The first round of channel allocations does not affect channels already used by the trial DAB services. Note also that some channels are already used by local multiplexes.

terference within the aviation band (108-137 MHz). The general conclusion of the Indonesian tests is that DRM on the FM frequency bands can make more effective use of the available spectrum while adding more broadcast services used for information, emergency warnings or entertainment. South Africa reached the same conclusion.

DRM in the USA

The DRM North America group published more information on the two international broadcasting stations seeking licences to transmit programmes consisting of DRM audio and unspecified datacasting for third parties. I have been unable to confirm many of the details on the DRM North America website using the FCC databases, such as the frequencies that might be used. I did



learn, however, that the call sign for the station in Alpine New Jersey is WIPE. The company pushing this project forward, Turms Tech, applied for a licence on the 1st July 2020, stating that the construction finished on the 21st June – just a few weeks before the two-year period for construction ran out.

It is expected that the FCC will issue a licence because only a handful of people objected some of whom have a vested interest in similar endeavours classed as experimental radio services. One of the experimenters is a company called 10Band that has a handful of Experimental Radio Services licences and call signs awarded by the FCC to conduct confidential experiments on short wave but not in the broadcast bands. The *drmna.info* website stated that the second DRM station that is just starting construction has a call sign of WPBC. According to the new radio station display format used by Wikipedia, this is a former call sign of WJZA; it ceased being used in 2017.

<https://en.wikipedia.org/wiki/WJZA>

KTWR Guam

KTWR conducted tests to India for a week in early September on 15200kHz, testing two different configurations during each transmission. The changeover of the audio mode took place in mid-broadcast and was seamlessly done. They started with stereo (called 'parametric stereo' in DRM), then went to dual-channel mono audio, audio plus a slideshow, audio plus a website' and then audio plus *Journaline*.

I was particularly interested in *Journaline* because my only experience so far has been the (very basic) one-line headline category, one-line item headers, and some 'body' text produced by the BBC World Service.

Having watched a couple of seminars on distance-learning using DRM, I hoped that KTWR's version would be more advanced. I was disappointed because KTWR used the same structure (Fig. 5) but added a lot more

text. It looked like there should be external links and a least one image, but I only received a text-only version. Perhaps *DReAM* rendered all the links as text-only?

The B20 Broadcast Season

The B20 winter season (final schedules to appear from mid-October) will be starting when you get this edition of *RadioUser*. Nevertheless, a few tentative, and mostly incomplete, schedules were available at the time of writing this column. The BBCWS is on 15620kHz to India from Singapore from 0800-0900 UTC but there was no entry for the service from Woofferton on 3955kHz from 0600-0700. Radio Romania International has English to Europe at 0630 on 6040kHz, 1800 on 7350kHz, 2130 on 6030kHz, and 2300 on 6040/7220kHz. WINB has its service beamed towards southern Europe starting at 0700 on 7315kHz, moving to 9265kHz at 1000, and then 1200-1700 on 13690kHz. China National Radio has its usual extensive domestic service from 2000 to 1200 UTC on up to seven frequencies. Between 0400 and 0800 UTC CNR1 transmits on 6030, 11695, 11990, 13825, 17770, 17800, and 17830kHz. Radio Purga in the Russian Far East carries on testing at various times on 6025, 11860, 15325; no doubt, Radio Pyongyang will appear on 3205 or 3560kHz.

Streaming, 5G and DAB

I heard an announcement on talkRADIO that the morning shows are also streamed on YouTube, Facebook and Twitter. I found it on YouTube (Fig. 6) streaming the presenters. Sometimes, there was also a caption that told you the name of the contributor. Streaming video from a radio studio is not new, and I wonder if this is an easy path to using 5G or just a gimmick? Might a big radio owner like the Wireless Group create a video player carrying streams from its station?

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Chrissy Brand

chrissylb@hotmail.co.uk

Chrissy Brand has an update on how the BDXC adapted to a tumultuous year, postponing social events but keeping news and information flowing to its members.

The pandemic has affected most clubs and organisations in one way or another and the British DX Club is no exception. Many members were looking forward to attending summer radio fairs and club social gatherings. Commonsense and Covid-19 regulations meant that an FM DX day on a Dorset hilltop and the annual summer gathering by the River Thames in Twickenham fell foul to the ever-changing rules.

The Reading International Radio Group (RIRG) meetings also had to stop, and the European DX Council (EDXC) conference in Bucharest, that some members were planning to attend, which included a visit to Radio Romania International, was postponed until September 2021.

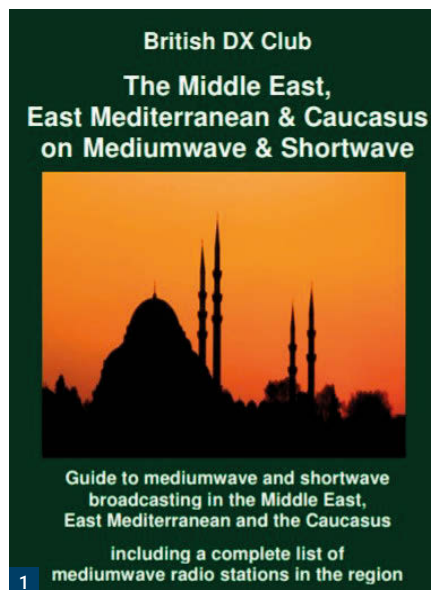
At the time of writing, it was uncertain whether or not the BDXC's 59th *Sheigra DXpedition* would take place in the autumn. Ever since 1979, DXers have been heading to Sutherland on the far northwestern tip of the Scottish mainland, to enjoy fantastic DX conditions and some radio camaraderie.

The BDXC Board will hold a (Zoom) meeting in the autumn. The Board oversees the smooth running of the club. It consists of six experienced members, most of whom still work in the broadcast industry. Although they all have specific roles, each takes on additional workloads. It is this spirit of teamwork that contributes to the club's longevity and success. Chris Greenway is the chair, Dave Kenny is treasurer, Andrew Tett is secretary and *Audio Circle* producer, Alan Pennington is in charge of printing and despatch, Stephen Howie runs the club's social media, and Chrissy Brand edits the club bulletin, *Communication*.

The 2020 Vision

One milestone the club reached in 2020 was the 550th edition of its monthly publication, *Communication*, in September. The support and interaction of the club's 500-strong membership ensure that every month, *Communication* is full of logs from all of the broadcast bands and global DX and radio news

The British DX Club: Tuning the World Since 1974



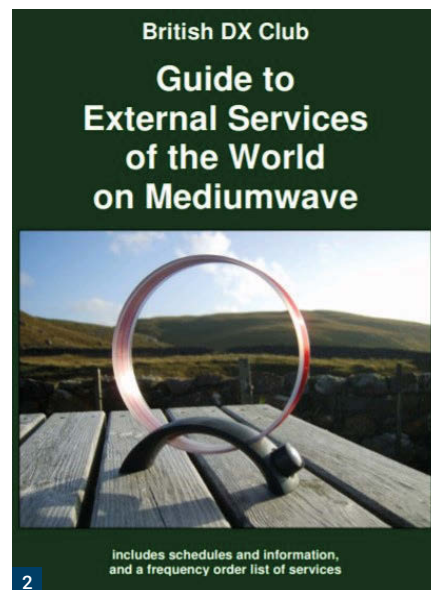
stories and developments. Regular columns include *Open To Discussion*, compiled by David Morris, and *Helpdesk* with Tony Rogers, both of which are member feedback columns. Historical and contemporary articles about all aspects of radio also feature.

In 2020, we welcomed back Karl Zuk from the USA for his occasional *Across the Pond* column. Stefano Valianti in Italy gives us *Southern European Report*, while Dario Gabrielli staffs the QSL desk, sharing members' latest QSL cards and verification information.

BDXC member and *RadioUser* book reviewer, David Harris, writes for the BDXC on all manner of radio topics. In 2020, this included RAJAR, looking at what is new on DAB, definitions of DXing and radio channels on YouTube.

[see also David's contribution in this issue of *RadioUser* – Ed.].

Every Autumn, Tony Rogers publishes an up-to-date list of the (mainly North American) stations broadcasting in the X-Band, i.e. in the frequency range 1610-1700kHz at the top of the Medium Wave band. The X band is not allocated to licensed broadcast stations in Europe,



thus opening the possibility of clear trans-Atlantic reception in Europe if propagation conditions are right.

Well known DXer, Alan Roe, contributes his *Listening Post* features and in 2020 included programme reviews of current short wave stations, from Radio Exterior de España and ERT 5 The Voice of Greece to Channel 292. Alan's *Music on Shortwave* is also a popular and useful list, published on the BDXC website.

In 1974, when the club first began, membership cost 75p a year in the UK. This has very slowly increased over the decades but BDXC has always prided itself on delivering quality news and information with a quick turnaround and good value for money. Currently, for £18 a year (UK) you will receive 12 monthly issues of *Communication* plus the *Broadcasts In English* booklet in May and December. See website for full details.

www.bdx.org.uk/apply.html

See our great book and magazine offers at www.radioenthusiast.co.uk/store



3

Whether you are a member or not, there are many well-researched and highly useful articles on the website. These include guides, such as *External Services of the*

World on Mediumwave; The Middle East, East Mediterranean and the Caucasus on Mediumwave and on Shortwave; Radio Nacional Amazonia, and Visit to the Popov Museum in Ekaterinburg (Figs. 1 and 2).

Broadcasts In English

The club's *Broadcasts In English* publication is available to non-members for a small cost. The latest version (Fig. 3) covers the B20 schedules, from November 2020 to the end of March 2021. Compiled by BDXC's Dave Kenny, it includes details of all known international broadcasts in English on short wave and medium wave for the current schedule period, as well as selected domestic English-language broadcasts on short wave.

The 24-page booklet is in a handy time order throughout and covers all target areas worldwide. Transmitter sites are included where possible along with schedules for Media & Mailbag Programmes and Digital Radio Mondiale (DRM) services in English.

Broadcasts in English is sent free to all

members of the British DX Club. Copies are also available to non-members at the following prices (postage included): UK: £3; Europe: Airmail, £4 (€6) (cash/Paypal), 5 IRCs; or \$6 (US Dollars-cash/Paypal). Rest of the World: Airmail, 6 International Reply Coupons, \$8 (US Dollars-cash/Paypal) or £5.

If you would like an electronic copy in pdf format, rather than the printed copy, this is available on request.

The price for the pdf version is the same as the UK rates above.

UK Cheques / postal orders are payable to *British DX Club*. You can use International Reply Coupons or cash (in \$US, € or other major currencies (but no foreign coins or foreign cheques)). Please send Paypal payments to:

bdxc@bdxc.org.uk

Orders by post go to: British DX Club, 10 Hemdean Hill, Caversham, Reading, RG4 7SB, UK.

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www.bdxc.org.uk/bie.html

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Scott Caldwell

Scottandrew.caldwell@yahoo.co.uk

The long-awaited Tecsun PL-990x has finally arrived in the United Kingdom. In the first part of my two-section review, I will be focusing on specifications and features, and on some initial reception results on the broadcast bands on long- medium- and short wave. The current version of the PL-990x is marketed as the 'export-version' for Europe.

<https://tinyurl.com/yy7polrv>

The differences between the PL-990 and PL-990x models lie in the amount of frequency coverage in relation to the chosen tuning step sizes, as follows:

PL-990: LW (100-519kHz); SW (1711-29999kHz); FM (87.5-108MHz Step: 100kHz); Other FM (Step 100kHz).

PL-990x: LW (50-522kHz); SW (1621-29999kHz); FM (87.5-108MHz Step: 50kHz); Other FM (Step 100kHz).

<https://tinyurl.com/yxbzcyn7>

A summary of the receiver's principal specifications can be found in Table 1, at the end of this review.

Moreover, Table 2 shows the equipment I have relied on for this initial review.

These days, it has become an almost rare experience to test a 'traditional' radio receiver. It is also a great time to put a new radio through its paces, given the advent of the Winter DX season.

Many in the market and hobby communities believe that the PL990x may well represent Tecsun's last high-end entry in the 'traditional' portable radio receiver market, together with the forthcoming new-concept of the Tecsun H501, which, to my knowledge, has not arrived in Europe as yet.

<https://tinyurl.com/y68fc72m>

<https://tinyurl.com/y63wtoy9>

A Remarkable Re-design

The radio represents a complete and systematic redesign of the old flagship model – the ever-popular Tecsun PL-880.

It appears to have been heavily influenced by the old Grundig Satellit 500 and 700 models of days gone by, especially in terms of the arrangements of the rotary controls on the side of the radio, arrangement of control buttons and great



First Look: The Tecsun PL-990x

Scott Caldwell has had the new Tecsun PL-990x portable world band receiver in his shack and offers his review of some of the radio's key features and performance.

sound quality. At first glance, this seems to be even more so, in the case of the other forthcoming new Tecsun world band receiver model, the Tecsun H-501 (see the previous section).

<http://www.tecsun-radios.com>

In my opinion, the main advantages of the PL-990x over the PL-880 can be encapsulated as follows:

- More modern styling
- MP3 playback
- Improved SSB reception
- Superb FM reception
- Bluetooth functionality

The audio quality of the new model is quite remarkable for a small portable receiver; full, clear, and enormously powerful, both on the radio and in MP3 playback mode.

However, a major disappointment is

the lack of a (timer-controlled) recording function, a feature that I frequently use on my SDR, when Dxing for North American broadcast stations on medium wave at inconvenient times.

By contrast, the option to utilise the Tecsun PL 990x as a Bluetooth speaker is very handy, so the radio can become a media player too. The side input and output ports have small protective inserts. They are exceedingly small and not attached to the case, so could easily be misplaced. However, they have a practical design function in keeping the ports free of dust and dirt – an important consideration as the radio ages and it is subjected to frequent use.

An Example of Medium Wave DXing

Initially, I checked the conditions on medium wave at 00:30 hrs, when the



house was nice and quiet, by tuning my SDR (RSPdx) to my favourite North American station VOXM (St Johns) on 590kHz. As I expected, it was there loud and clear. I then decided to compare the Tecsun PL 990x with my SDR, by also tuning to 590 kHz.

I initially tended to believe that the Tecsun would struggle to receive this station, given the fact that it was connected to an indoor AN200 loop, whereas the SDR was connected to my Wellbrook ALA1530 loop located outside, behind the shed, away from electrical interference from the house.

However, I was incredibly surprised to receive VOXM – albeit with a slightly weaker signal – with a SINPO rating of 32222. This is the first time that I have ever received a North American station without the utilisation of a high-performance communication receiver or SDR connected to my outside Wellbrook ALA1530.

This and other basic listening tests I performed lead me to believe that the Tecsun PL 990x is slightly more sensitive than its predecessor, the PL-800.

Some other medium wave catches achieved with the Tecsun PL-990x are condensed into Table 3.

The Beauty of Hidden Features

Not everyone might realise that a special feature enables the listener to alternate between the internal ferrite antenna and the telescopic whip antenna while listening on the medium or short wave bands.

To do this, you should follow the procedure outlined in Table 4.

(Source, and thanks to our colleagues at *SWLing Post*:

<https://tinyurl.com/yy9zxmly>

Other 'hidden' features of the Tecsun PL-990x have been (provisionally) reviewed here:

<https://tinyurl.com/yycwsy3r>

Short Wave Dxing

The Tecsun PL 990x utilises a combination of multiple frequency conversion and modern DSP digital demodulation technology, allowing improvements in the sensitivity, selectivity, strong signal handling and image rejection.

The implementation of the local, medium and DX input selector is beneficial in reducing overloading of the frequency spectrum when listening to local and more distant stations.

As far as I can tell, these claims are borne out by my experience in this review. Table 4 shows a list of short-wave stations I received (SINPO) in various locations and with a range of aerials.

After my initial testing, I would concur with many, but not all, of the early online reviews, in that they suggest the Tecsun PL-990x has the edge over its predecessor, the PL-880, in terms of audio quality in the narrow SSB selections.

<https://tinyurl.com/y33jfwyv>

I will put the radio through its paces for another month or so and I will report back in some more detail in Part Two of this review, scheduled for the December issue of *RadioUser*.

Outstanding Features

- A Systematic redesign of the acclaimed Tecsun PL-880.
- Tecsun addressed problems with the Synchronous Detection Mode. It is now incorporated as a standard function rather than a hidden feature.
- Selectivity functions are still excellent when considering the purchasing price.
- Audio quality is full, clear, and very powerful.
- Tecsun has incorporated an MP3 playback feature and a micro-SD card port.
- Inclusion of Bluetooth function.
- Build quality is excellent (Tuning & Function knobs).
- Bandwidth function now has separate buttons (more user-friendly).
- Inclusion of practical accessories (faux leather case).
- ATS (Automatic Station Tuning) included as standard.
- Timer Options (Including 24-Hour Clock).

Developmental Issues

- Reduction in speaker size when compared to the PL-880.
- There is no broadcast recording function to micro-SD card.
- The top section of the telescopic antenna is very thin – liable to bending or breaking.
- Number keys cut with white paint – liable to rub off after repeated use.

- Frequency Range: Longwave 100kHz – 519kHz in 9kHz steps. Fine-tuning option in 1kHz steps.
- FM spectrum of 64MHz to 108MHz (facilitating global FM broadcast reception).
- Medium wave: 520 – 1710 in 10kHz steps, with 1kHz fine-tuning; 522kHz – 1620kHz in 9kHz steps, with 1kHz fine-tuning.
- Short wave: 1711 to 29999kHz in 5kHz steps, with 1kHz fine-tuning.
- IF frequency: AM first IF, 55.845MHz, second IF, 10.7MHz, third IF, (DSP) 45kHz.
- Audio format: Supports 16bit / 44.1kHz WAV, FLAC, APE, WMA, and MP3 formats micro-SD (TF) card up to 128G (not included).
- Synchronous detection range +/- 1KHz.
- Independent fast and slow dual tuning structure.
- Local, medium, and DX input selector.
- External antenna port for enhanced short-wave reception.
- Headphone port, suitable for stereo headphones below 300Ω.
- Speaker 4Ω, 3W; Audio output port for external amplifier or recorder.
- Storage capacity for 3,150 radio frequencies in 25 accessible memory pages.
- Powered by 18650 rechargeable lithium battery (3.7V), with USB smart port charging function.
- Weight 620g; Dimensions 198 x 120 x 38mm.

Table 1: Tecsun PL 990x Key Specifications.

- Tecsun PL990x
- Wellbrook ALA1530 Loop Aerial
- MFJ-1020c Active Aerial
- AN200 Tecsun Tunable Medium Wave Loop Aerial
- Skywave Active Aerial
- Random Wire Aerial

Table 2: Equipment Used for this Review.

My overall opinion so far is that the Tecsun PL 990x represents an excellent choice both for a novice and an experienced DXer. It is also very suitable to act as a travel radio due to the small size and weight, ideal to carry as hand luggage in a post-COVID 19 world.

I shall return to the receiver next month to look at SSB reception and other features not covered in Part One. A review of this radio is also scheduled for the 2021 edition of the *World Radio Television Handbook*.

The Tecsun PL 990x is most definitely on my shopping list, and my sincere thanks go to Mike Devereux and his team at Nevada for the loan of the review model. The Tecsun PL-990x is available at official Tecsun importer Nevada Radio for £259.95.

<https://www.nevadaradio.co.uk>

Frequency	Station	Location	Date	UTC	SINPO	Remarks
590kHz	VOCM	St Johns, NL	09/10	00:30	32222	MX, Slight Fading, Clear ID VOCM, EE
603kHz	Smooth Radio	Littlebourne, UK	15/10	05:46	33333	Smooth Early Breakfast, Continuous Noise, ID
750kHz	CBGY	Bonavista Bay, NL	11/10	05:37	33222	CBC Radio 1 Black Lives Matter Echoes All Over the World, ID, EE
837kHz	COPE	Multi-Site, ESP	15/10	05:21	43333	TX, Slight Co-Channel Interference, ID, SS
891kHz	Radio Algérienne	Ouled Fayet, ALG	15/10	05:51	43333	TX, Singing, Good, Moderate Noise, AA, ID
900kHz	RAI	Milan	15/10	05:05	44444	TX Lockdown National, Slight Noise, ID, ITA
1062kHz	Country Radio	Praha, CZH	15/10	06:00	43333	POP MX, Moderate Noise, ID Country Radio, CZH
1130kHz	WBBR	New York, NY	09/10	00:45	32222	Bloomberg – The World is Listening, EE
1575kHz	RAI	Genova ITA	15/10	05:30	33333	TX Financial Times, Moderate Noise, ID, ITA
1593kHz	Bretagne 5	Saint-Gouero, FRA	15/10	05:37	44444	POP MX, Very Slight Noise, ID, FF

Table 3: Some Outstanding Medium Wave Catches.

- Power up the receiver and select the 'Medium Wave' or 'Long Wave' option.
- Press and hold the [3] key for approximately 2 seconds.
- When the display indicates "CH-5" (actually an "S" which represents the Short-Wave telescopic antenna) the receiver is now set to Medium Wave/ Long Wave reception using the telescopic whip antenna.
- The display will indicate 'Medium Wave/ Long Wave', or 'Short-Wave' on the left-hand side of the screen.
- Press and hold the [3] key for approximately 2 seconds.
- When the display indicates "CH-A" (A denotes AM) the receiver is set up to Medium Wave/ Long Wave reception utilising the internal ferrite antenna once again.

Table 4: Antenna-Switching on the Tecsun PL-990x).

Frequency	Station	Location	Date	UTC	SINPO	Remarks
6015kHz	Radio Romania Int	Galbenia Bacu	15/10	05:05	44444	Start of BX in FF, Good, ID, FF
6155kHz	Radio Austria Int	Moosbrunn	15/10	05:16	54444	TX Corona, Lockdown in Paris, Moderate Noise, ID, GG
11650kHz	Radio Romania Int	Galbenia Bacu	15/10	10:35	44444	TX, Slight Noise, Traditional Folk MX, ID, FF
13635kHz	Voice of Turkey	Emirler	13/10	08:50	54444	Turkish POP MX, Very Good Signal, ID, TUR
13755kHz	VOA	Udon Thani, THA	13/10	09:16	22222	TX, Continuous Noise, Weak, ID, CC
15130kHz	Radio Romania Int	Tiganesti-Saftica	15/10	11:02	44444	NX State of Alert Extended for 30 Days, ID, EE
15220kHz	CRI	Kashi, CHA	15/10	10:55	43333	MX, TX, Moderate Noise, ID HUN
15245kHz	Voice of Korea	Kujang, KOR	13/10	08:31	33333	Traditional Singing, MX, Fading, ID, RUS
15320kHz	Radio Romania Int		15/10	11:15	44444	NX Romania Supports EU Financial Framework, NX, ID, EE
15380kHz	Radio Saudi	Riyadh, Saudi A	13/10	08:43	44444	TX, AA Chanting, Good, ID, AA

Table 5: Some Impressive Short-Wave DXing Results.

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Keith Rawlings
Keith.g4miu@gmail.com

Keith Rawlings shares an aerial query from a regular correspondent and sheds some light on the designs, functions and correct uses of preselectors for both traditional radios and SDR receivers.

I will begin this month with some correspondence I received by email from reader Lionel who is 88 years young: Lionel, who contributes regularly to Chrissy Brand's *International Radio Scene* column, has experienced a problem with his MFJ1020B preselector when used with an aerial.

He described his setup as follows: "three smaller antennas, joined end-to-end in the vertical position, and reaching about 95 cm in height. On this antenna, I added a wire loop about halfway up. In addition to this, I included a horizontal branch at right angles to the upright of about 50cm, plus two 50cm branches of the same length in a 'rabbits-ear' position; And finally, two more pointed downwards at the same angle."

The problem is that, although this aerial seems to work well when Lionel turns on the power supply, he loses at least two or three S-points [of signal], compared with leaving the MFJ without power.

He found that this applies to all frequencies throughout the short wave bands, and he asked if I had any idea why. I am afraid I could not come up with a solution, not helped by the fact that I have never owned or used an MFJ1020B. Therefore, I am opening this query up to you to see whether anyone can come up with any ideas that may help Lionel. Is anyone else experiencing this problem?

Investigating Preselectors

I would like to stay with the topic of preselectors for this column. In simple terms, a preselector is an RF stage, which can be adjusted. It acts like a filter fitted between an aerial system and the RF input to a receiver. It can be tuned to accept certain frequencies while blocking others.

Generally, these devices are designed to have a narrow bandwidth or 'passband'; when tuned to the desired frequency, unwanted signals are attenuated or blocked, while those signals at the operating frequency are allowed to pass. This results in better front-end selectivity, and it lowers any chances of overload and cross-modulation in the receiver.

The Ins & Outs of Preselectors

ALL PICTURES: KEITH RAWLINGS



Preselectors can be external units, such as Lionel's MFJ (above), or they can be built into equipment during manufacture; many older radios were made this way, for example, the Yaesu FRG7 and KW2000E transceivers.

Preselectors are not just limited to amateur equipment: Top-class receivers, such as the Racal RA17/1217 series, and the later RA1772 series, all had sharp, passive LC (inductor-capacitor) operator-adjustable, preselectors. As well as being expected to be used with large aerial

systems, these devices were often required to work with co-located transmitters. The extra selectivity helped to reduce any breakthrough problems that may have arisen.

Preselectors and AMUs

It is important to note that a preselector is not that same as an ATU/AMU (Antenna Tuning/Matching Unit). An AMU is there to present a good balance between the aerial system and the receiver input, to convert a 'bad' impedance to a good one if you like.

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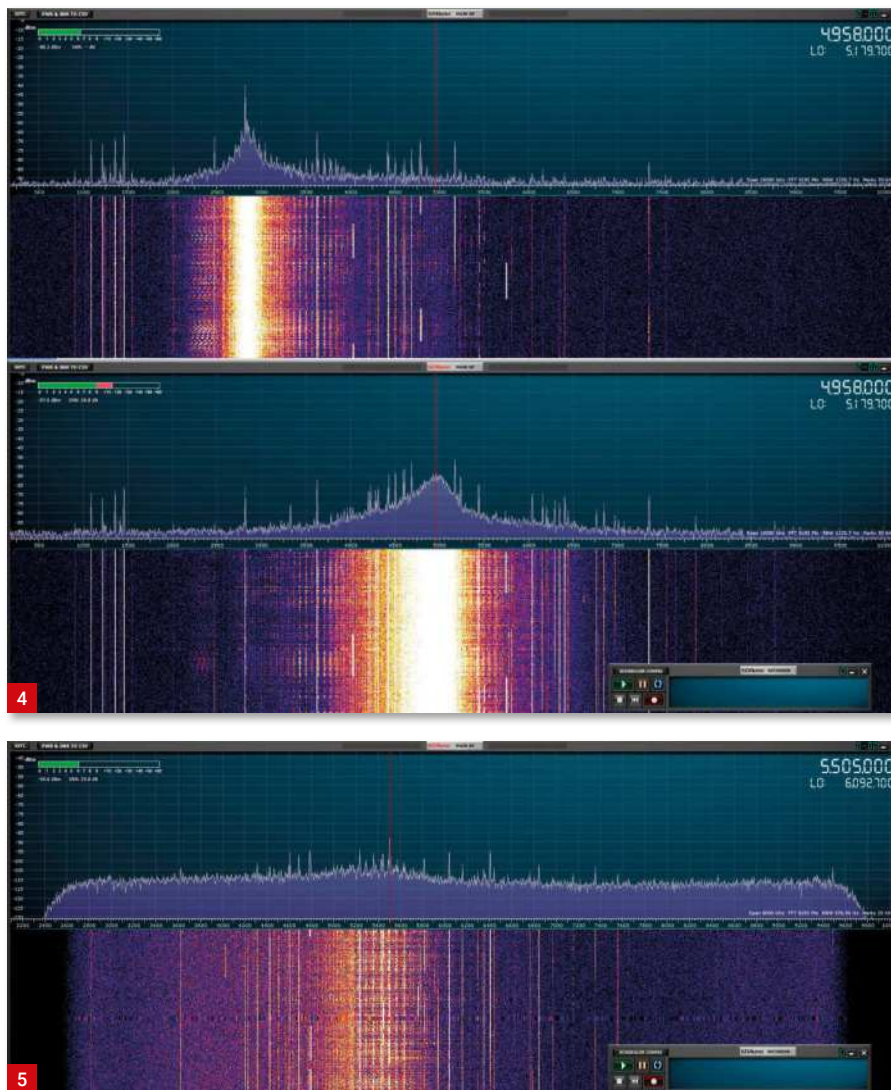


Fig. 1: The PR40 (front). Fig. 2: The PR40 (rear). Fig. 3: The insides of the PR40 preselector, showing its very straightforward design. Fig. 4: Over-driven preselection example (3MHz top; 5MHz bottom). Fig. 5: A preselector, set to the correct level. Fig. 6: A homemade preselector.

While it is true that an AMU can (and often will) act as a form of filter, rejecting signals that are out of band, this is not always the case.

Like everything else in life, there is no such thing as a 'free lunch', and by putting an extra stage of filtering in front of a receiver there are the inevitable losses. Usually, receivers with built-in preselectors will have had this taken into account. Those radios that would benefit from the use of such a device can be provided with an exterior unit with an amplifier built into it.

This amplifier may not just be there to make up for losses but also as an added boost for receivers whose performance

is lacking, especially at the higher HF frequencies, where these units would benefit from the improved selectivity and gain.

One such receiver that did benefit from this was the Codar CR70A. Operators could either use it with the single valved PR30 preselector or with the later, two-transistor, PR40 (Figs 1-3).

I used a PR40 to liven up an Admiralty Murphy B40 on the upper HF bands throughout most of the 1970s!

However, when using an amplified (active) preselector, it is important to not have too much gain; otherwise, the receiver's front-end can be overloaded, and any improvements will then be ruined. Also, the amplifier itself needs to be well-designed, lest it should become overloaded.

Some Points to Consider

I think it's true that most modern receivers, when used with a decent aerial (and

AMU), will not benefit from an additional preselector, except in the presence of strong nearby signals.

Something to take into account, in case of an active pre-selector is that it can only really help with the SNR (Signal to Noise Ratio) of a weak signal if the amplifier noise figure is better than that of the receiver. If both their noise figures are the same, there will be no SNR improvement.

Therefore – unless the amplifier has a lower noise figure than the receiver it is connected to – it may give little improvement and could make things worse. Where one may prove to be useful is when a less-than-optimum aerial is used; we then start going towards an active aerial scenario. Remember also that a pre-selector can't improve the ratio of SNR picked up at the aerial.

Some outboard pre-selectors can be modified to help protect the receiver they are used with from voltage spikes and static damage. I will discuss another time exactly how this can be achieved

Preselectors and SDRs

A preselector, either active or passive, can be of use for some of the cheaper SDR receivers. The latter frequently overload in the presence of strong adjacent signals. Adjusting to a narrow passband you will reject signals outside of this range, and this should help the SDR to behave itself.

The downside of this is that the broadband capabilities of the SDR, where a range of spectrum can be monitored on a computer screen, will now be lost, with a peak in reception around the operating frequency only, depending on how narrow the filter is.

Moreover, the preselector will need retuning as the frequency is changed (Fig. 4). You can see the PR40's bandpass characteristics peaked at 3MHz in the top image. Below, where the PR40 has been peaked at 5MHz, you will observe how signals outside of the passband are attenuated. Ordinarily, you would not adjust a preselector to have this much gain, as the level is far too high. It has been done this way to emphasise the passband. The image in Fig. 5 shows a more sensible gain level.

Note that a preselector will not 'cure' noise or interference problems unless they are caused by unwanted mixing products, which the unit can effectively filter out. Interference from such things like PLT, Plasma TVs 'dirty' power supplies and the like are, unfortunately, seen as 'legitimate' signals and will pass through.

Other methods are needed to avoid this type of noise.

Useful Preselector Designs.

There are many designs to be found on the internet and in books for readers who wish to make their own preselector. Preferably, a 'bandpass-type' should be chosen. Preselectors are not overly complex to make, especially if pre-wound inductors are sourced.

This could form the basis of a simple construction project for a couple of evenings over the winter.

The illustration in Fig. 6 is a photograph of one of several experimental preselector designs I lashed up for my G4CLF HF SSB transceiver board.

You might also wish to have a look at these URLs, for more ideas and resources.

<http://jbryant.eu/pages/g4clf.htm>

<http://www.arrl.org/rf-and-af-filters>

<https://tinyurl.com/y6sv67ce>

<https://tinyurl.com/y2n3yh9h>

In Private and Commercial Use

It is very easy to use a preselector. First of all, you set the receiver to the signal or frequency of interest. Then, set the preselector to the appropriate band and simply adjust the tune control to 'peak' the signal. Finally, you adjust the preselector gain (if it has one) for a satisfactory signal level.

Remember if you set too much gain from the preselector, which is easy to do, then you may overload the receiver. This can cause cross-modulation and lead to the production of spurious signals. As noted above, a preselector will amplify noise as well as wanted stations. A weak station with a noisy background will become a strong signal with a noisy background, and it will be less pleasing to listen to. If not used correctly, an amplified preselector is capable of doing more harm than good.

Commercial equipment might be required to work alongside co-located transmitters.



One such setup might consist of a transmitter and receiver working together using full-duplex (that is, the transmitter is active at the same time as the receiver), and on common aerial.

The transmitter would likely have an output above 500W or more. This level of RF would do more than just cause interference to the receiver, and damage may well occur. To combat this, manufacturers have made stand-alone preselection and protection units. One such model was made by Racal; it was known as the MA197. Its tuning range was restricted to 2-24MHz.

The device could be used for shipboard operation where there could be no great displacement of transmitting and receiving aerials. The MA197 (there were at least three models, the 'A', 'B' and 'C' types) would give from 85 to 100dB of attenuation to a signal that was just 5% off of the wanted signal.

What is more, they offered the receiver protection of up to 40V Electromotive Force (EMF).

Of course, devices with those ratings were not particularly small, especially in previous eras, such as the 1960s. The MA197 came in a hefty 19" rack mount unit. Within, the unit had a two-stage valve amplifier with a modest (fixed) 6 dB of gain to help make up for losses. There was a solid mains transformer for the associated

power supply. Each of the tuned stages had very substantially-built screened inductors with heavy gauge wire and complex switching arrangements. The whole array was built on a solid cast aluminium chassis. It was, literally, bomb-proof, both physically and to RF.

To be fair, the MA197 is not a practical proposition for most people. Ignoring their sheer size, there is a hefty band switch that has to be set, and also a stiff, lockable, tuning control. These units were really designed to be set to a frequency and left there; continually tuning them can become a chore.

<https://tinyurl.com/yxe8mdd2>

Preselectors are used in commercial communications daily, although they sometimes go by different names. Imagine sites where multiple transmitters and receivers are located. There may be transmitters with an ERP (Effective Radiated Power) of hundreds of Watts, and those aerials might be a just few feet away from receiving aerials connected to radios capable of receiving down to the noise floor.

There is the possibility of receiver desensitization, quite possibly IMD (Inter Modulation Distortion) in either the receiver, the transmitters or even via the 'rusty-bolt' effect.

While a preselector will not cure all types of interference in these cases, any added front-end selectivity will help. A quick online search came up with the following links for commercial devices.

<https://tinyurl.com/y2xpvmuq>

<https://tinyurl.com/y5xueuru>

Many modern receivers – among them the SDRPlay, Perseus, AR5007D and so on – use fixed preselectors, which are selected automatically by the software.

Last but not least, just as this month's column went for submission, our sister magazine *Practical Wireless* came out featuring a simple Georg Dobbs preselector design.

Stay safe, and I will see you all next time!

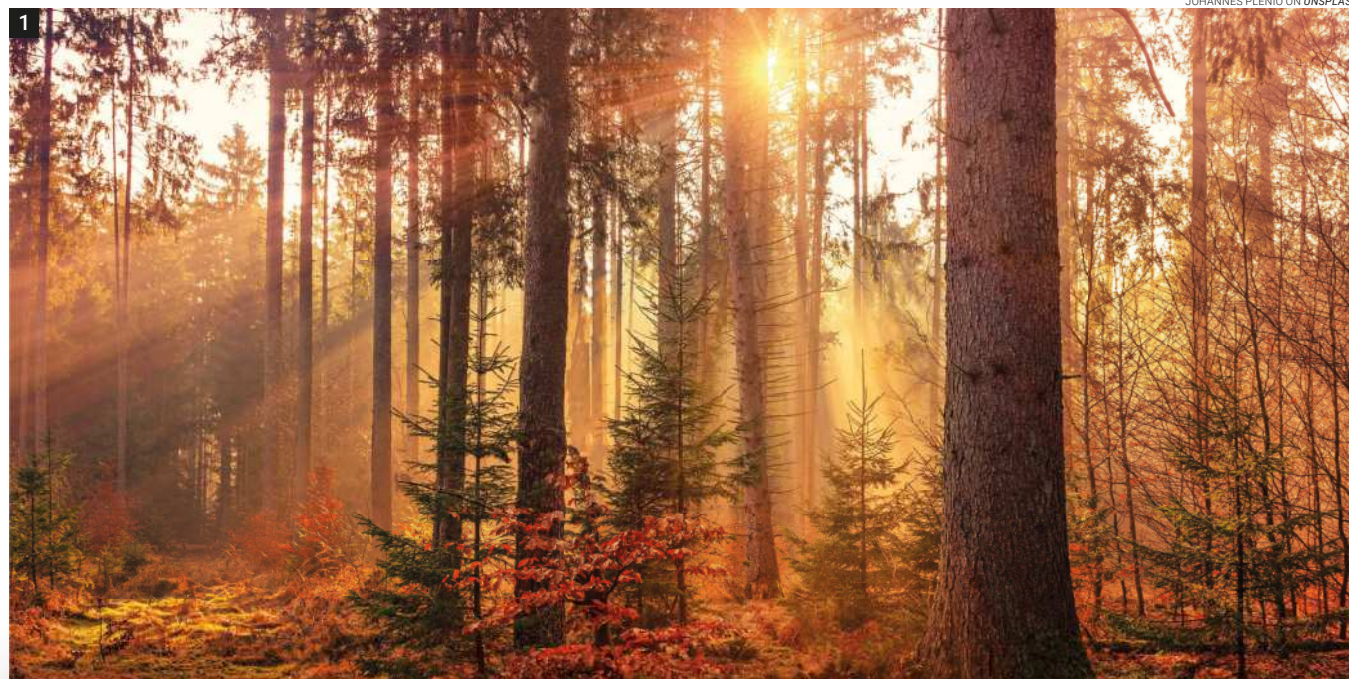
In next month's RadioUser

- Review: Moonraker MHR-100 VHF Maritime Transceiver
- Review: Tecsun PL-990x (Part II)
- CB Radio: An Introduction (Part II)
- Who Invented Morse Code?
- Early Valve Portable Radios

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The December issue is on sale on the 26th November 2020





Seasonally Scintillating Selections for November

Chrissy Brand
chrissyLB@hotmail.co.uk

My decades of DXing and radio listening have created many happy memories, which include friendships, tours of radio stations, hearing memorable music and other programme content. Whatever the season, the ever-changing radio and audio landscape ensures that there is always something new and exciting to listen out for, along with the more familiar but high-quality programmes, from all over the planet.

In the summer, hearing Algerian stations Chaîne 1, 2 and 3 on FM, thanks to Sporadic E conditions, is always a highlight. It might be the 'geeky' side of me, but seeing "Chaîne" pop up on the RDS on my radio is always a wonderful moment. Late July also saw some rare DXing conditions, with several Icelandic FM stations logged in the UK.

Tim Bucknall in Cheshire heard RÚV Rás 1 and 2, classical music on RÚV Rondó and adult contemporary music station K100, amongst others. He also had an impressive haul of FM logs from North Africa, Greece,

Chrissy Brand highlights some stations and programmes worth exploring this autumn, with programme content ranging from revolution and inspiration to late-night music and relaxation.

Belarus, Ukraine and Russia. Tim's equipment was an Elad FDM S2 SDR receiver, a Reuter Elektronik RDR54D1 receiver and an HS Publications 6-element 76 to 94MHz aerial with a rooftop rotator.

Radio by Day and Night

Another day in the strange summer of 2020 that stood out for me, for its longevity and radio programme content, was when I drove from San Leolino in Italy to St. Leonards-On-Sea in East Sussex. Admittedly, there was a little matter of a flight from Pisa to Manchester included in the journey, and flying during a pandemic was an eye-opener in itself. The ghostly empty airports, masked staff and passengers seemed rather dystopian and a reminder of how we need to live now. My headphones and podcasts were a welcome diversion.

Whilst in Pisa, I heard Radio Zeta on

87.5MHz playing a wide range of musical genres, and also Radio Margherita on 87.8MHz. Both stations sit well with me as they concentrate on Italian songs, including a lot of melodic styles from the 1960s to the current day. Radio Margherita also airs some nice musical features. *Comparisons*, which plays two versions of the same song by different artists, and *A Day Together*, which examines musicians' lives and songs.

Another station I grew to like was Radio Toscana on 88.0MHz, which I noticed has issued QSL cards in the past. Mauricio Molano Sanchez, an FM DXer in Spain, received one back in 2012. He has many more examples at his blog.

Impressively, in August he received verification of a Nigerian FM station picked up on 87.7MHz, Crest FM in Akure. The station plays reggae, R and B, and it carries news and features with a Christian emphasis, in

Fig. 1: A chill in the air on walks and on the air in radio. Fig. 2: Radio Nacional de España: The *En Directo* app. Fig. 3: I Heart Radio, a home for Alice and Megsy's travelogues.

English and other languages.
<https://moladx.blogspot.com>
<https://crest877fm.com>

Back in the UK, it was a balmy 18°C at midnight as I drove down the motorways from Manchester to Sussex. BBC Radio Somerset from Taunton on 1566kHz medium wave had Charlie Taylor playing blasts from the past such as The Bluebells' *Young at Heart*, Meghan Trainor with *All About That Bass* and *Crazy Crazy Nights* from Kiss. In between the music, features included *Upload* and *Make a Difference*. It was an inoffensive and easy-going programme to have on in the background.

Italy was not far from my mind, and booming into Oxfordshire with a strong signal on 1575kHz was RAI Radio Uno from Genoa.

BBC Scotland (810kHz) airs many wonderful music programmes, some of which play lesser-known songs from Scottish artists. The one-hour show I heard from 2200 to 2300 UTC (and on the BBC Sounds app) is simply named after the presenter, Natasha Raskin Sharp.

This talented woman is also an art and antique expert, regularly seen on television. On the night I was listening, her late-night radio show was presented by a stand-in, Ravi Sagoo. He did a good job but it was the choice of contrasting and well-chosen music that did the talking.

In the *Late Great* feature, he paid tribute to *Qawali* singer Nusrat Fateh Ali Khan, there was an Algerian version of The Clash's *Rock the Casbah* and music from Scots Camera Obscura, Anna Meredith and Frightened Rabbit. I am working my way through past episodes online.

www.bbc.co.uk/programmes/b08lh88b
<https://natasharaskinsharp.co.uk>

My summer night 200-mile drive home was made memorable thanks to RNE Radio Nacional on 684kHz. The *Solo Jazz* programme at 2302 UTC (0002 BST, 0102 Spanish time) as Thursday turned into Friday, was full of evocative and atmospheric recordings. The long, recorded as-live, pieces created a picture of sipping cocktails in a jazz club.

Other pieces took me on a musical journey, parallel to the hardcore my Škoda was pounding along on. A piece called *Common Fields* by Dutch pianist Wolfgang Brederode's Quartet was particularly mesmerising. *Solo Jazz* is on the air from Tuesday to Friday.

The winding roads and countryside, along with music and stations from different parts of Europe, were another reminder of the power,

companionship and feelings of comfortable contentment that live radio conveys.

You can listen to RNE on medium wave. Try 531, 567 612, 621, 639, 657, 864 and 1017kHz, as well as online and through the *RNE En Directo* app (Fig. 2). If you don't speak Spanish, then set your web browser to translate into English. I uncovered a wealth of information at the RNE website, including some great features on jazz music. Music, of course, is a language all of its own.

Autumnal Audio

Autumn is an ideal time for long nights spent listening to the radio, perhaps feeling invigorated after a walk in the woods (Fig. 1). A lot is happening on the bands at present. The September assault on the independence of UK commercial radio in the takeover by Bauer saw over 50 stations rebranded, to become the ominous-sounding and ubiquitous Greatest Hits Radio.

Globally, the radio scene is abuzz with international affairs and election news, from Belarus to the USA. It was a tense time in Belarus after the rigged August election. Radio Free Liberty and Polish Radio upped their number of transmissions in Belarusian to counteract the censorship of Belarus' domestic state radio, which had mostly changed to a no-news, all-music and entertainment format.

Polish Radio broadcast these three times a day, at 0630 local time in Program 1, in the magazine programme *At Noon* after 1200 and in the evening at 2200 in *Poland and the World*. These were being aired on 225kHz long wave, proof again of how vital analogue radio can be in times of crisis.

These programmes could also be heard online at the Polish Radio website. At the time of writing, it is unclear how long these broadcasts will continue.

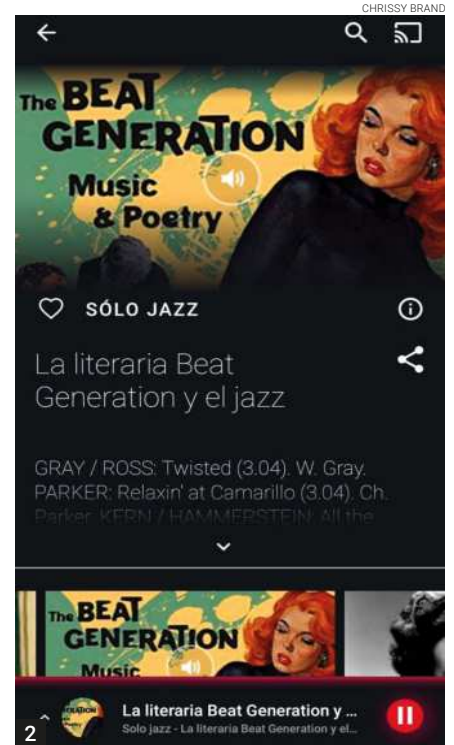
<https://tinyurl.com/y25u925j>

Radio Belarus International meanwhile, did have a slot on short wave as well as online, with English on 3985 (1930 to 2030 UTC) and 6005kHz (1800 to 1900 UTC). Programmes include features on history and tourism in the country, plus *Letters to the Editor*, *Famous People of Belarus*, *Compatriots*, *Identity* and *Together*, which showcases charities.

<http://radiobelarus.by>

In Canada, CBC Radio One produces a programme that recommends podcasts. *Podcast Playlist* is an enjoyable audio-wander through some bizarre, enthralling and out-of-the-ordinary programmes waiting for us all out there in Podcastland. There will be something for everyone here. Comedy, pirates and outer space have been recent themes.

The August 24th episode was handed over



to young people. Tai Poole is eleven years old and "loves math, science and thinking about the way the world works." Tai also hosts his own podcast, *Tai Asks Why*.

www.cbc.ca/radio/podcastplaylist

Graham Smith states there is still plenty to hear on 630kHz. While RTT Radio Nationale in Tunis is off the air overnight, there is a choice of Radio Timișoara in Romania or RTP Antena 1 from Portugal.

Meanwhile, Lionel Clyne logged The Voice of the Tigray Revolution at 1839 UTC on 5950kHz; the station was broadcasting in Tigrinya Afar from Addis Ababa Gedja, with a SINPO of 55233.

BBC Monitoring explains that The Voice of the Tigray Revolution (*Tigrinya Dimste Wayane Tigray*) is affiliated with The Tigray Peoples Liberation Army, a partner in the ruling coalition with The Ethiopian People's Revolutionary Front. Before the overthrow of the Mengistu regime in 1991, this station operated as a clandestine broadcaster in opposition to the then existing government.

Six of the Best

Perhaps the best type of radio programmes are those that uplift and inspire, be they speech or music. This month I offer you six suggestions for stations, podcasts and programmes to take you to a better place in your head.

Our Plague Year is a podcast that started in March, with around 30 episodes produced so far. Joseph Fink of the *Welcome to Night Vale*

Date	Time (UTC)	Station	Programme	Podcast	URL/ Stream/ Frequency
Daily	0905 to 1000	Klassika Raadio, Estonia	<i>Meditatsioon</i> (nature, chillout music)	https://tinyurl.com/y27wj88s	https://tinyurl.com/y27wj88s 90.4MHz
Daily	0215 to 0230 (and 0815 and 1415)	Radio Nepal	<i>News in English</i>	Google Podcast and other apps	http://radionepal.gov.np and FM MW locally
Weekdays	1800 to 2200	BBC Radio Guernsey	<i>Tim and Sydney</i> (features and music)	BBC Sounds App	www.bbc.co.uk/programmes/p08mlmfb 93.2MHz and 1116KHz
Friday (uploaded by late morning)	55 minutes long	Deutsche Welle	<i>Inside Europe</i> with Keith Walker	https://tinyurl.com/y6feenyv	www.dw.com
Saturday	1100 to 1200 (1400 to 1500 Kenyan time)	Kenyan Broadcasting Corporation	<i>The Books Café</i> with Khainga O'Okwemba	Intermittent https://tinyurl.com/yyyyxfmx	www.kbc.co.ke/radio-live and FM MW locally
Sunday	0500 to 1100 UTC	WXPN Philadelphia	<i>Star's End</i> with Chuck van Zyl (space music)	www.starsend.org/update.html	https://xpn.org 88.5MHz

Table 1. Top listening recommendations for the month ahead in international radio.

and *Alice Isn't Dead* podcasts introduces, "a new kind of current events podcast. It's a scary year, but it doesn't have to be scary alone."

It is, as you will have realised, all about Covid-19 and the reactions to it, from a US perspective. People are invited to phone in with a three-minute piece explaining how they feel. The result is vox pops covering moods, literature and light-hearted happenings, as well as harder-hitting facts, figures and ideas for coping with the pandemic. For me, it is both calming and supportive.

The *Big Travel Podcast* is hosted by Lisa Francesca Nand and consists of a series of interviews with inspiring people. One of these (Episode 103, August 2020) was with poet and BBC regular, Lemn Sissay. The interview covered a lot of ground, from a childhood in care and fostered in Lancashire to rediscovering his Ethiopian heritage.

A handful of radio presenters have been featured, including Pirate Radio and BBC Radio 1 Extra DJ Fabio, BBC veteran John Simpson, BBC Radio 4's Jane Garvey and one of LBC's Conservative Party presenters and campaigners, Iain Dale.

<https://thebigtravelpodcast.com>

In January, an entire station promoting mental health is due to launch in Newcastle. Seven Bridges Radio was unsuccessful with a crowd funder but after delays, now seems ready to go online, with music, talks and features on well-being. Details are being unveiled on the Seven Bridges Radio Facebook page.

www.facebook.com/sevenbridgesradio

In a similar vein, an online station called *My Happy Radio* started in 2020 in Lancashire. Positive news stories are broadcast each hour. Kath Lord-Green, the founder and former station director at community radio Ribble FM, is behind it. She said, "For too long the vibration of the nation has been low and we aim to raise this and prove there are great, happy, positive stories across the UK – we just don't hear them."



News editor Andrew Hegarty added: "It's great to be bringing positive news stories to our listeners, especially now, when the news is full of doom and gloom - this really is the antidote!"

www.facebook.com/myhappyradio
www.myhappyradio.co.uk

World Cafe is a two-hour music programme presented by Raina Douris on WXPN in Philadelphia and syndicated nationally on NPR. Raina's career started at Toronto rock station 102.1 The Edge. She then hosted daily music shows on CBC Radio 3. Seven years ago, she was part of the team that launched Central Ontario Broadcasting's Indie88 radio station. In 2014 and 2015, she was chosen as the "Best Radio Personality in Toronto" by *Now Magazine* readers.

An August edition of *World Cafe* included a chat with USA indie rock band Bright Eyes about their first album since 2011. Called *Down in the Weeds, Where the World Once Was*, it is scattered with sound effects and recordings to create atmospheres, from people on the street, relations in conversation, to the joy of Happy Hour Thursday in a bar.

"Erik Satie-like melancholic distended chords" was how the band's Conor Oberst and Nate Walcott described one track, *Page Turner's Rag*. They also spoke of the positivism that 2020 brought with the continued global struggle and protests against institutional racism.

Another new Bright Eyes song is *Marianna Trench*, named after the deepest point on Earth in the western Pacific Ocean. The song is about juxtaposition, the varying human experiences and contradictions, the world being at a crossroads and needing to make the right decisions.

World Cafe is a programme you should definitely tune into this autumn. You may want to work through the extensive audio archive as well.

www.npr.org/sections/world-cafe

It has not been the best year for travel, for obvious reasons. At the time of writing, I still hope to reach Lisbon by train in December for the *Radiodays Europe* conference. A radio programme that always inspires me on my journeys is *Girls Talk Travel* (Fig. 3). This I Heart Radio programme and podcast sees two women, Megs and Alice, look at many aspects of travel and chat with women who have "been there and done that".

The podcast, although advertised as weekly, tends to come out fortnightly and runs for around half an hour. Preserving travel memories, learning a language, 'kick-ass' female travellers to follow and positive travel stores all line up with trips which include Kathmandu, Barcelona, Tbilisi and Davenport in Iowa.

<https://foodfuntravel.com/girlstalktravel>
<https://tinyurl.com/y2a3lerr>

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Chris Rolinson
g7ddn@g7ddn.com

Network Radio in the Voluntary Emergency Sector

For some time now, I have been planning to feature the use of Network Radio in emergencies. So I was very pleased to make the acquaintance of Gareth Batchelor, who you may recall gave us some interesting personal thoughts on the Hytera PNC380 in my August 2020 review of that radio (*RadioUser*, August 2020: 48-51).

Voluntary Response Teams

Gareth is a member of *Leicestershire & Rutland 4x4 Response UK*.

<http://www.lr4x4response.org>

You might have heard of their parent group *4x4 Response UK*.

<https://4x4response.uk>

All the 4x4 Response Groups in the UK provide support to the emergency, statutory and other voluntary services. They are particularly in demand during poor weather conditions in remote locations – difficult terrain can prove very awkward for ‘traditional’ response vehicles.

Volunteers like Gareth respond to all kinds of situations, 24 hours a day, 365 days a year. They use their own four-wheel-drive vehicles or work in supporting roles to others who do. Whenever you read in the news about floods, other severe weather or emergencies that impact on parts of the UK landscape with difficult terrain, you can bet there will probably be a 4x4 Response Group involved somewhere.

4x4 in the East Midlands

The Leicestershire & Rutland Group was formed in January 2010. Since that time, this East Midlands-based group has been active during times of snow, flood and other severe situations where normal vehicles would struggle. Services they have provided include delivering ‘Meals on Wheels’ to folk in remote locations, transporting Nurses into the community in snowy weather and assisting Ambulances to reach patients in inaccessible areas. During the summer months, they work with groups and charities to assist with marshalling for community events. By way of example, Gareth mentioned one event he is involved with - the CiCLE Classic race:

www.cicleclassic.co.uk

This event is the longest-standing one-day international cycle race in the British calendar. Without L&R4x4 Response, the event

Chris Rolinson takes note of the growing role Network Radio is playing in the context of the vital support work of volunteer emergency groups in the UK – during the Coronavirus pandemic and beyond.



would not go as smoothly as it does. Gareth noted, “...our group provides marshals and vehicles to assist with both closing the route as the race progresses and re-opening after it has gone through. It’s always a challenging day with many responders deployed to more than one location.”

A Memorable Callout

I wanted to know if Gareth had any special memories of a specific incident with which he was involved. He had a few but mentioned this one in particular. He remembered: “I was called out on emergency late one evening to a patient in a remote snow-bound village – the patient was on palliative care for an end-of-life illness; their pain-controlling medicine had run out and the nurse needed to get to the patient urgently to sort out further medication. I was deployed to collect the nurse and drive the two of us through the snow. We had to navigate around several large drifts to make it into the village to deliver the medicine. The very next night I was taking a different nurse out on her usual rounds, but one of those visits was because the patient had sadly passed away. It turned out to be the very same patient from the previous night; because we were able to get the

medicine to them, they were able to pass peacefully and without pain.”

Covid-19

L&R 4x4 Response has been playing their part during these unusual times of the Coronavirus pandemic too. They have been collaborating with pharmacies and PPE providers to distribute prescriptions & equipment to both establishments, as well as individuals who are sheltering. At the time of writing, Gareth estimated their Covid operations numbered the following: 35 responders deployed across nearly 300 jobs; 700 volunteer hours; over 170 deliveries of PPE and over 2,500 of prescription medications. That’s a lot of miles, getting towards 15,000 in fact, but not one job that has been requested of them has remained unfulfilled!

More About the UK Organisation

National 4x4 Response UK (mentioned earlier) provides a wider perspective to the local groups’ work. All over the country, there are 4x4 Response units in most UK counties, all working together to assist each other, should there be a large-scale incident in any one area.

Remember the Whaley Bridge Dam collapse a few years ago due to floods in the Peak District? Volunteers from several different 4x4 Response regions were called out to assist in that emergency - they took food and equipment and helped secure roads so the Chinook Helicopter, deployed to shore up the dam, could operate more safely.

And Radio Communications?

Working over a large geographical area, coupled with having smaller areas within that

Fig. 1: The Computer-Aided Dispatch System.
Fig. 2: BroadNet BN880 on a Pharmacy run.
Fig. 3: A Hytera PNC380 Network radio running BroadNet. **Fig. 4: Anysecu W4 in the vehicle running the UKEMGDISP channel.**
Fig. 5: Responder tracking on Google Maps.

that are known to need responders more than others (e.g. areas prone to flooding), getting quality communications between users has always been a problem. Groups have tried several ways over time; text messaging, WhatsApp, the digital radio DMR services using repeaters, but each has proved to be lacking in some way or other. With texting and WhatsApp for example, the location of responders is not transmitted; with the digital VHF system, there were simply too many areas where getting a viable signal was impossible.

Some 4x4 groups around the UK had looked into encouraging every member to get an amateur radio licence, but this also presented issues; firstly, not every member is actually that interested in radios. To ask them, as a volunteer, to give up their precious time to get a qualification in an area in which they may have little or no interest, was found to be tough. CB radio was also looked at but, again, limited coverage and location tracking of responders remained an issue.

Enter Network Radio

It was about this time that Network Radio started to appear on the scene, as Gareth explains... "We, like many other groups, started using free channels on the Zello app. This immediately solved our distance issue but the technology was still in its infancy and mobile coverage could still sometimes be found wanting. However, the potential was clear and the mobile infrastructure was something that was only going to improve."

A few of the regional groups started to look more closely at Network Radio; by then, several small companies had started up and they were offering both a tracking service and a POC solution as a package. Some of these are still in use today though others have fallen by the wayside. Today there appear to be 2 preferred choices within the 4x4 Response community: ZelloWork and BroadNet.

www.zello.com
www.broadnet.systems

Key Differences

There are some fundamental differences between these two platforms. Gareth out-



ALL PICTURES: GARETH BATCHELOR

lined them for me in some detail: "ZelloWork provides PTToc, channels and mapping, but does not, I believe, give you a way of tracking a responder's time spent on the scene and what job they are assigned to. But for charity groups, ZelloWork is free and will work on pretty much any smartphone as it has Apple and Android versions. And it is easy to deploy – it works well for any of the groups that use it."

BroadNet is slightly different, and it is the choice of L&R 4x4: Gareth stated: "BroadNet can offer a full Computer Aided Dispatch system (Fig. 1); it has the ability for the subscriber to add and title their own channels; it has different statuses, which are, in turn, repeated on the mapping of the dispatcher, so they can see at a glance which asset is available and busy. The user can also add their statuses if needed."

BroadNet also can see exactly who from the organisation is online – both within one's channel but also even on a different channel. This is particularly useful to the responders when there are multiple small groups deployed across the county at different events or incidents, who are all operating on their own channel. Gareth explained: "You can still see that they are online and you can then either individually call them (point-to-point), page them, or even find their location or navigate to them if your handset supports that feature."

For the controllers, there is the facility when creating a 'job', to put in the location and call category (1=urgent, 5=least urgent) and then plot these on the maps. The job it-

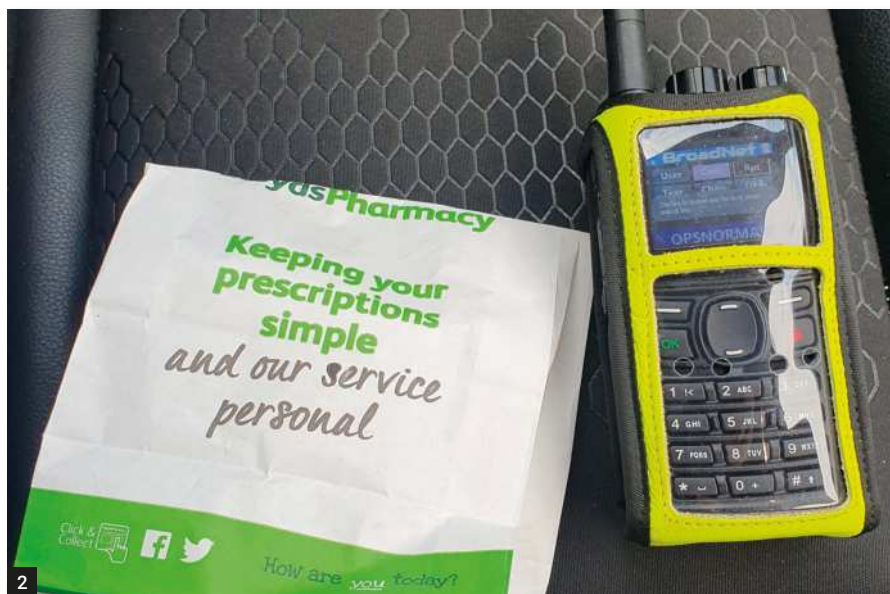
self can be then sent directly to any responders who are allocated by the controller. Any notes or further information can be added by the responder or the controller. Gareth again: "What this means for us as a group, is that we have a full Computer Aided Dispatch system that we can use to deploy responders to incidents and callouts as needed. It is all logged too - and when a job is closed, it even creates a .pdf of the incident for audit purposes, so times on scene, and so on, are all recorded."

BroadNet can also create 'callsigns' for multiple handsets. So, if you have a member who has more than one handset, as Gareth does, or you have responders crewing up together, then these handsets can also be grouped so that any information that gets sent to them will go to any or all handsets rather than having to be assigned multiple times. "We were very lucky with our system insofar as the responders are quite enthused by it!" remarked Gareth. "While not all have a handset, the majority do. And more are buying into the system all the time. Yes, it is a separate handset to carry, but we use Broadnet's design, the BN880 handset; [it is] a very rugged device, and it is proving to be very capable" (Fig. 2).

Gareth tells me that his group have been able to get grants to help with the initial purchase and running costs. BroadNet also helps by trying to arrange an affordable package for 4x4 groups.

An Unusual Channel

During the 'Big Freeze' of early 2019, BroadNet created a UK Emergency Channel



for all groups to use. Up until this point, all subscribers had used their own channels. But for the snowy weather, *BroadNet* created one large pan-UK channel. This was particularly useful, as it enabled any group that had an emergency need to transmit. Responders could provide information about incidents or delays countrywide.

The channel (called UKEMGDISP) was only designed to be a short-term experiment for the period of the snow, but it proved so popular that it became a permanent fixture and it is now monitored by a group of volunteers 24/7. Gareth calls it "...a fantastic achievement. I used the channel a few times before my group was fully on board and they supported me when I came across road accidents by keeping an eye on my location and making a note when the ambulance or other services arrived."

Usefully, *BroadNet* also provides the groups with a 'Critical Services Network' SIM card. This is a SIM that keeps hopping on to the network with the strongest signal, a little like the 'Anywhere SIM' I referred to in past columns. This gives responders the best possible signal anywhere in the UK. One of Gareth's colleagues, who uses this SIM,

reported that, even in the middle of Wales, working on the many car rallies that take place there, he was the only responder who had full comms, thanks to this special SIM.

Other Network Devices

Gareth usually has two radios on the go; while he did use *BroadNet's* BN880, he now prefers the Hytera PNC380 handset (Fig. 3) He also has an Anysecu W2 4G mobile in his vehicle (Fig. 4); this has the advantage of using Google Maps. Gareth recalled one incident where that proved very useful:

"Recently, when I was deployed to assist another member who had broken down, I got a What3Words (GPS Tracking app) location for them. The system integrates What3Words easily, so I input that to the ticket I was raising on the Computer Aided Dispatch (CAD) system and had my callsign allocated to it. My PNC380 was sitting next to me, but my Anysecu W4 was on in the car – although tuned to the UKEMGDISP channel, rather than my group channel.

"Because of how the system is set up, I was still able to get the CAD, acknowledge it, and then Google Maps navigated me directly to the incident location. All this, while another

member had direct comms with the casualty and was able to relay information via the PoC to the responders who were attending the incident.

So, I was able to get the CAD and navigate, while still being on another channel and monitoring that one – very useful!" (Fig. 5).

In Conclusion

Leicestershire & Rutland is now able to operate a full Computer-Aided Dispatch system with pretty much complete comms across their full area and even beyond. They have location tracking, job times and updates together with audit-tracing, as well as full voice communications, all in one package.

The term audit-tracing refers to the ability to track all messages of any kind through the system

The last word comes from Gareth: "The arrival of POC solutions across the board for 4x4 Response groups has opened up a way to have secure, reliable, real-time communications, regardless of distance, which has enabled us to operate far more efficiently and safely than ever before." And if that is not a testimony to the 21st Century effectiveness of Network Radio, what is?

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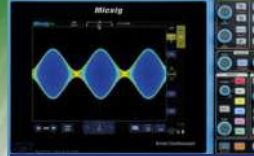
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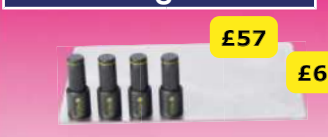
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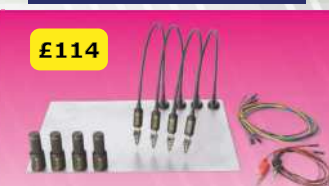
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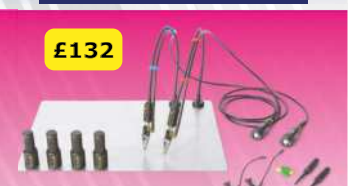
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