The Official Newsletter of the

PAPAKURA RADIO CLUB INC.







INTERNAIONAL LIGHTHOUSE AND LIGHTSHIP WEEKEND







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This Month's Meetings:

Wed 4 August – General Meeting – 30 days of wild Space Weather

Wed 11 August - Project Night - Arduino

Wed 18 August – Committee Meeting

Wed 25 August - AREC SAR-track training

Also, remember there is a Thursday daytime meeting schedule starting at 11:00 and finishing around 13:00, Hopefully, this may appeal to members who may not find getting to the rooms at night so easy

CLUB ACTIVITY:

A quieter month as we settle into winter mode, and some changes to the meetings this month to accommodate some more regular AREC training.

There is a concerted effort to develop some improved Civil Defence structures and roles in Papakura which may expand our contacts and influence in the community. Hopefully, there will be some more to report on this in the coming weeks and months

After the general meeting, we will have a presentation on the weird solar behaviour of the past month.

ZL1JLM – FINALLÝ GOT HIS 100% EXAM PASS PIN.

Wally ZL1JLM was finally presented his 100% exam pass pin at the last general meeting, While wally has been recognised for this achievement we only realised recently that his pin has been sitting in a drawer, so it was with pride, and some embarrassment, that we finally presented the pin. So if you see Wally sporting his special NZART award, be sure to comment.



And thanks for being such a good sport Wally

ZL2DSG - LISTEN FOR IT

Congratulations to David, who passed his NZART Examination last week, and has sought the callsign ZL2DSG. We are looking forward to helping him get on air, and hope that you will all give hm a warm welcome, and help him on his way towards his first 50 contacts

UPCOMING ACTIVITIES:

WED 4 AUGUST – GENERAL MEETING WED 11 AUGUST – PROJECT NIGHT - ARDUINO WED 18 AUGUST – COMMITTEE MEETING WED 25 AUGUST – AREC SAR-TRACK TRAINING

THURSDAYS 10:00 AM DAY MEETINGS

AS THESE ARE SUBJECT TO CHANGE - PLEASE LISTEN FOR UPDATES ON THE SUNDAY MORNING CLUB NETS. (SEE BACK PAGE FOR FREQUENCIES AND TIMES)

Papakura Radio Club Inc.

August 2022

INTERNATIONAL LIGHTHOUSE LIGHTSHIP WEEKEND - ILLW

Normally held on the 3rd full weekend in August

This year 00.01UTC 20th August to 24.00UTC 21st August 2022 (48 hours)



Belosaray Light, Mariúpol, Ukraine.

For some reason or other August seems to have become the international weekend for lighthouses. Countries all over the world have become involved in one way or another in some lighthouse activity. Some years ago the United States Congress declared August 7th as their National Lighthouse Day and during that first week in August amateur radio operators in America set up portable stations at lighthouses and endeavour to make contact with each other. This event is known as the US National Lighthouse Week.

In Britain, the Association of Lighthouse Keepers, ALK, conducts International Lighthouse Heritage Weekend on the same weekend as the ILLW in August. Their objective is to encourage Lighthouse managers, keepers and owners to open their lighthouse or lightstation and related visitors centres to the public to raise the profile of lighthouses, lightvessels and other navigational aids, and to preserve our maritime heritage.

However, the major event which takes place in August is the International Lighthouse Lightship Weekend, ILLW, which came into being in 1998 as the Scottish Northern Lights Award run by the Ayr Amateur Radio Group. The history of this event can be found elsewhere on this site. The ILLW usually takes place on the 3rd full weekend in August each year and attracts over 500 lighthouse entries located in over 40 countries. It is one of the most popular international amateur radio events in existence probably because there are very few rules and it is not the usual contest-type event. It is also free and there are no prizes for contacting large numbers of other stations. There is little doubt that August has become "Lighthouse Month" due largely to the popularity and growth of the ILLW.

This year listen out for ZL1KBR, ZL1LIG, ZL2LH, ZL6CC & of course, ZL6LH (David, Ian and John) at Farewell Spit – They will appreciate the contact

DX Calendar August 2022

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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										-	V4/N	T5V																		
	<u>807AG</u>																													
<u>A35JP/P</u>																														
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														<u>5</u>	R8L	H			,											
	H44MS																													
	VK0MQ																													
	DX0NE																													
	JX/LB4MI																													
	FT4XW																													

FEATURED EXPEDITION:

VKOMQ MACQUARIE ISLAND

Matt, VK5HZ will be active as VK0MQ from Macquarie Island, IOTA AN - 005, starting Mid June 2022.

He will operate on HF Bands, SSB, FT8, using ICOM IC-7100 transceiver and tuned whip antenna..

Matt Gledhill, (VK0MQ) is now qrv from Macquarie Island. He is QRV between June and through to October 2022.



Logs, LOTW & traditional Paper Qsl Cards will be available via M0OXO OQRS or M0OXO Direct Post Mail in due course. Please be patient as Matt is very busy on the Island.

For information on other expeditions, click the link in the calendar above, or check out



CONTESTS AUGUST 2022

Det	Time	D-1		Danda	Contact Nome	Mada	Evelopme	Cooperate Mahaita
Dat	e-Time	Dai	te-Time	Bands	Contest Name	Mode	Exchange	Sponsor's website
2	010 0	2	015 9	1.8-28,50	Worldwide Sideband Activity Contest	Ph	RS, age group (OM, YL, or Youth)	wwsac.com/rules.ntml
2	0100	2	0300	3.3-28	ARS Spartan Sprint	Dh	RST, SPC, Power	arsqrp.blogspot.com
3	0230	3	0300	1.0-14,21	Phone weekly rest	PII	INA. Name, SPC, non-INA. Name	Fray Contest Rules ndf
3	1700	3	2000	144	VHE-LIHE ET8 Activity Contest	FT8	4-char grid square	www.ft8activity.eu
4	0000	5	0300	7	Walk for the Bacon ORP Contest	CW	Maximum 13 WPM_RST_SPC_name	grpcontest.com/pigwalk40
4	1900	4	2100	1.8-28.50	SKCC Sprint Europe	CW	RST_SPC_name_(SKCC_No_/"none")	www.skccaroup.com
5	010 0	5	0230	14	QRP Fox Hunt	CW	RST. SPC. name. power	www.grpfoxhunt.org
6	0000	7	2359	3.5-28	Batavia FT8 Contest	FT8	4-char grid square	batavia-ft8.com
6	0001	7	2359	28	10-10 International Summer	Ph	Name, mbr or "0," SPC	www.ten-ten.org
					Contest, SSB			-
6	1200	6	2359	1.8-28	European HF Championship	CW Ph	RS(T), 2-digit year frst licensed	euhf.s5cc.eu/euhfc_rules
6	1800	7	0559	1.8-28	North American QSO Party, CW	CW	Name, state/DC/province/country	www.ncjweb.com
6	1800	7	1800	222 and up	ARRL 222 MHz and Up	CW Ph Dig	6-char grid square	www.arrl.org/222-mhz-and-up-
-	4.400	-	1700	0 5 4 4	Distance Contest	DI .		distance-contest
1	1400	1	1700	3.5-14	SARL HF Phone Contest	Ph	RS, serial	www.sari.org.za
9	0100	9	015.9	1.8-28,50	Worldwide Sideband Activity Contest	Ph	RS, age group (OM, YL, or Youth)	wwsac.com/rules.ntml
10	0030	10	0230	3.5-14	NAQUE UW Sprint	CVV	RST, SPC, mbr or power	naqcc.into
10	0230	10	0300	1.8-14,21	Phone weekly rest	Ph	NA: Name, SPC; non-NA: Name	Fray Contest Pules ndf
10	1700	10	2000	432	VHE-LIHE ET& Activity Contest	FT8	4-char grid square	www.ft8activity.eu
12	010.0	12	0230	1/	ORP Fox Hunt	CW	RST SPC name nower	www.arpfoxbupt.org
12	1500	1/	1/50	144	MMMonVHE/DUBUS 144-MHz	CW Ph Dig	Signal report	www.mmmonyhf.de/ctestinfo.nhn
12	1000	14	1400		Meteorscatter Sprint Contest	Strinbig	olghai lopolt	
13	0000	14	2359	3.5-28	WAE DX Contest. CW	CW	RST. serial	www.darc.de
13	1200	14	2359	1.8-28,50	SKCC Weekend Sprintathon	CW	RST, SPC, name, mbr or "none"	www.skccgroup.com
13	1400	13	2200	3.5-28	Kentucky State Parks on the Air	CW Ph Dig	KY park abbreviation or SPC	k4msu.com/kypota
13	1400	14	0400	1.8-50	Maryland-DC QSO Party	CW Ph Dig	Entry class, county or SPC	w3vpr.org/mdcqsop
13	2300	14	0300	1.8-28	50-MHz Fall Sprint	CW Ph Dig	4-char grid square	svhfs.org
15	0000	15	0200		4 States QRP Group	CW Ph	RS(T), SPC, mbr or power	www.4sqrp.com
					Second Sunday Sprint			
16	010 0	16	015 9	1.8-28,50	Worldwide Sideband Activity Contest	Ph	RS, age group (OM, YL, or Youth)	wwsac.com/rules.html
17	0230	17	0300	1.8-14,21	Phone Weekly Test	Ph	NA: Name, SPC; non-NA: Name	www.perluma.com/Phone_
	1 = 0.0			1.00		570		Fray_Contest_Rules.pdf
1/	1700	1/	2000	1.2G	VHF-UHF F18 Activity Contest	F18	4-char grid square	www.ft8activity.eu
18	0000	19	0300	14	Walk for the Bacon QRP Contest	CW	Maximum 13 WPM, RST, SPC, name	drpcontest.com/pigwaik20
19	0000	19	1600	14		Dia	RST, SPC, name, power	www.qrproxnunt.org
20	0000	21	1000	3.3-20	ARTG WW RTH Contest		Col, selidi	www.sartg.com
20	0000	21	2309	to light	ARRE TO GHZ and Op Contest	CW FILDIG	o-chai ghu square	www.arri.org/ro-griz-up
20	1600	20	1759	1.8-28.50	Feld Hell Sprint	Dig	(see rules)	sites.google.com/site/feldhellclub
20	1800	21	0559	1.8-28	North American QSO Party, SSB	Ph	Name, state/DC/province/country	www.nciweb.com
21	1400	21	1700	3.5-14	SARL HF Digital Contest	Dia	RST. serial	www.sarl.org.za
21	1800	21	2359	3.5-28	ARRL Rookie Roundup, RTTY	Dig	Name, 2-digit year frst licensed,	www.arrl.org/rookie-roundup
						U U	SPC or XE province	
21	2300	22	010 0	1.8-28	Run for the Bacon QRP Contest	CW	RST, SPC, (mbr/power)	qrpcontest.com/pigrun
23	010 0	23	015 9	1.8-28,50	Worldwide Sideband Activity Contest	Ph	RS, age group (OM, YL, or Youth)	wwsac.com/rules.html
24	0000	24	0200	1.8-28,50	SKCC Sprint	CW	RST, SPC, name, mbr or "none"	www.skccgroup.com
24	0230	24	0300	1.8-14,21	Phone Weekly Test	Ph	NA: Name, SPC; non-NA: Name	www.perluma.com/Phone_
0.0	040.0	00	0000			0144		Fray_Contest_Rules.pdf
26	0100	26	0230	14		CW	RST, SPC, name, power	www.qrptoxnunt.org
26	2200	28	2359	1.8-28	RTTYOps WW DX RTTY Contest	Dig	RS1, 4-digit year license frst issued	rttyops.com
21	0000	28	2359	2.3 GHZ	ARRE EWE CONTEST	CW Ph Dig	Signal report	www.arri.org/eme-contest
27	0400	20	0400	1 8-28	Hawaii OSO Party	CW Ph Dig	RS(T) HI district or SPC	www.hawajigsoparty.org
27	1200	28	0300	1.8-28.50	W/VE Islands OSO Party	CW Ph Dig	RS(T) USI/CISA Island	usislands org/gso-party-rules
21	1200	20	0000	1.0 20,00		Strinbig	Designation or SPC	activitation grque party-rules
27	1200	28	1200	1.8-28	YO DX HF Contest	CW Ph	YO: RS(T), county; non-YO: RS(T), serial	www.vodx.ro/en
27	1200	28	1200	1.8-28	World Wide Digi DX Contest	FT4/8	4-char grid square	ww-digi.com
27	1400	28	2000	3.5-28.50	Kansas QSO Party	CW Ph Dig	RS(T), KS county or SPC	ksgsoparty.org
27	1600	28	0400	1.8-28	Ohio QSO Party	CW Ph	RS(T), OH county or SPC	www.ohgp.org
28	1400	28	1700	3.5-14	SARL HF CW Contest	CW	RST, serial	www.sarl.org.za
30	010 0	30	015 9	1.8-28,50	Worldwide Sideband Activity Contest	Ph	RS, age group (OM, YL, or Youth)	wwsac.com/rules.html
31	0230	31	0300	1.8-14,21	Phone Weekly Test	Ph	NA: Name, SPC; non-NA: Name	www.perluma.com/Phone_
								Fray Contest Rules.pdf

All dates and Times are in UTC and are not adjusted for local time

Mbr = Membership number. Serial = Sequential number of the contact. SPC = State, Province, DXCC Entity. XE = Mexican state.

Listings in blue indicate contests sponsored by ARRL or *NCJ*. The latest time to make a valid contest QSO is the minute listed in the "Finish Time" column. Data for Contest Corral is maintained on the WA7BNM Contest Calendar at **www.contestcalendar.com**

Check for updates and a downloadable PDF version online at www.arrl.org/contests.

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AMATEUR RADIO - IS IT A TERMINAL CONDITION?

Just saw this tongue-in-cheek video on YouTube that I think may be summing up where my hobby is going: https://youtu.be/wL1N0_vJZTo

Dave ZL1MR

TEAS – Test Equipment Acquisition Syndrome

My name is Mark and I suffer with **TEAS** - test equipment acquisition syndrome. This is a video to help others determine if they suffer with the same affliction.

I thought I should document the stages of the disease to help others determine if they are also sufferers. Be warned, it strikes all ages and demographics, but sufferers all seem to pass through the same or similar stages as they progress downward to total ridicule and demoralisation. Some chose to mock the afflicted, but if you are a sufferer this is a very serious condition.

TEAS often rapidly transitions to **GAS** (more generic Gear Acquisition Syndrome – mine has branched into the acquisition of retro computers that I never use) and in all but the rarest of cases leads to **BCCS** (Burning Credit Card Syndrome) always followed by **DBA** (Drained Bank Account).

Sufferers who have partners are often **CAFE** (Caught Again Finding Equipment) or even in the act of **COFFEE** (Continuous Observations For Future Electronics Equipment); the state when you just can't stop running searches on eBay because you just know that the piece of equipment that you don't yet know you need is going to be listed at any moment – or even caught in the act of actual **TEA** itself. Eventually, you will often declare in all sincerity **LATTE** (Last Addition To Test Equipment) only to be caught sooner or later returning to the bad old ways.

Other sufferers seem to rapidly develop **EMI** (Equipment Matching Impulse) whereby they seek out the same manufacturer items gaining some strange satisfaction from having matching logos on close-by front panels.

Finally, once you have progressed to **JENGA** (Junk Engulfing Nearby Garage Areas) you know you are now a lost and hopeless cause. I hope you enjoy it! If you do, feel free to buy me a coffee:



RAMBLINGS FROM THE EDITOR'S DESK

It's been a crazy month, we had the normal winter weather problems, with fences needing fixes, Antennas damaged by winds, and a power supply fault in the shack, all of which were put to one side when we all tested positive for Covid-19. While it spread through the entire family at home, I'm pleased to report that the effects we manageable and with time the virus fell victim to our immune systems, which did a fantastic job of driving the invader out. *(anyone would think it had been designed for such a threat)* naturally, after a week off work, my return to the office meant trying to catch up on all the stuff I should have done while at home sick.

The James Webb telescope showed us the oldest galaxies, on the 12th, (11th if you count the US politicians trying to hi-jack the world event with a single photo the day before) and a week later, we saw even older parts of the universe.



Scientists from the Harvard and Smithsonian Center of Astrophysics have identified a 13.5-billion-year-old galaxy called GLASS-z13, which dates to 300 million years after the Big Bang.

The previous record-holder was a galaxy known as GN-Z1, spotted by the Hubble Space Telescope in 2016, with its light taking 13.4 billion years to reach Hubble



Even citizen astronomers have accessed the images and found galaxies like NGC 628 above found in the data by Suzy Schmidt. Naturally, the images are not the sort of sky we will ever see with an optical telescope, as they are taken in the infra-red spectrum, and manually coloured for effect, but even so, the images have been impressive, and many bets have been won or lost between astronomers as what they thought might have been Was revealed to be wrong by the latest in deep space imaging. For those using

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the images, it's 10 Billion dollars and over a decade of work well spent. But no doubt there are many who could have thought of other uses for 10 Billion Dollars.

However the tool is now in position, and we look forward to a plethora of data over the coming decades.

At the same time, a huge leap into understanding dark matter has arrived. The LZ, or LUX-ZEPLIN, aims to discover the unidentified particles that are thought to make up most of the universe's matter. Although no one has ever conclusively detected a particle of dark matter, its influence on the universe can be seen in the motions of stars and galaxies, or so the theory goes.

Located about 1.5 kilometres underground at the Sanford Underground Research Facility in Lead, S.D., the detector is filled with 10 metric tons of liquid xenon. If dark matter particles crash into the nuclei of any of those xenon atoms, they would produce flashes of light that the detector would pick up.

The detector has been searching for only 60 days, and while it has found no evidence of dark matter, it has done most spectacularly, Managing to find nothing better than ever before.

Dark Matter is important as while we can model the motions of planets in the Solar System quite accurately using Newton's laws of physics, scientists noticed in the 1970s that this didn't work for disc galaxies – stars at their outer edges, far from the gravitational force of all the matter at their centre – were moving much faster than Newton's theory predicted.

At the same time as the outstanding success of LZ in not finding Dark Matter, Many Physicists feel its time to ditch the standard cosmological model based on the physics of newton, (which requires both Dark Matter and Dark Energy to make the observations fit with the model) for a new model known as Mond.

Mond as proposed by Israeli physicist Mordehai Milgrom in 1982 called Milgromian dynamics or Mond – requiring no invisible matter. Mond's main postulate is that when gravity becomes very weak, as occurs at the edge of galaxies, it starts behaving differently from Newtonian physics. In this way, it is possible to explain why stars, planets and gas in the outskirts of over 150 galaxies rotate faster than expected based on just their visible mass. But Mond doesn't merely *explain* such rotation curves, in many cases, it *predicts* them.

As with so much of physics, and perhaps science in general, the idea that we have the perfect solution which must not be disputed, is not how science works, we need to test all of the ideas and models, and see what is happening with each, and as tests show weaknesses, we look to see what is wrong with our models, and see if there is a better option. Then if we think we find one, we seek a new way to test the theory.

And this is behind another experiment being proposed.

Which is to send some modern instruments out to see what is happening at the front of our solar system, where voyagers 1 and 2 have left the heliopause and travelled into interstellar space, only the readings are not at all what we have expected, and this raises the questions of have they yet left the solar system, or have they shaken everything we thought we knew about how our solar system interacts with the very local interstellar medium (VLISM).

And to find out we might need a newer spacecraft to find out



Voyager 2 was launched on the 20th of August 1977, while Voyager 1 left later on the 5th of September 1977, through various gravity assists and with a lot of solar system observations, they are now the most distant objects man has sent into the universe, but while it has taken almost 45 years to get to their current position, a more direct route and with some help from Jupiter, could get there much faster.

Pioneer 11 is expected to cross into the VLISM in 2027, followed by New Horizons in 2043, but neither was designed to study the interstellar medium. IBEX will be the first designed for this mission, But will it be the last?

And the voyagers? Well, with care and shutting down unneeded equipment, and assuming no further failures, they might continue to provide data possibly until 2030, but eventually, the power supplies will power down one last time, and they will simply drift in the void carrying their two golden discs with information on their origin. *(Let's hope that invitation was not a mistake)*

But with new eyes on our solar system boundary, we might learn something about our neighbourhood.

On Earth, things may seem a little more known, but it's important to realise that we still don't understand our oceans, or our atmosphere, in fact even though we use the ionosphere, and think we can predict and model it, NASA and ESA are planning missions into it, as it remains one of the unexplored parts of our planet, and the reason is to help us understand space weather.

The past 30 days have seen some of the most unexpected space weather yet recorded. We have had a burst of seven flares in seven days, then all of the sunspots on the earth side of the sun, just dried up. Weird as that was, then a new spot appeared and tripled in size in 24 hours, as this moves to face the earth, it has already popped solar flares, and could aim one right at us.

A couple of weeks ago we had a M9.6 flare just graze our atmosphere, these events are like the cyclones (or if you prefer hurricanes) of solar weather, and have huge energy potential.

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So far in the last week, we have only seen some smaller M class flares, but with the instability of the solar cycle, we have seen the solar flux drop down to double digits in the 90s with a mere 27 sunspots, but with M or higher class flares disruptions to the ionosphere can shut down HF propagation (the signals are absorbed in the high energy layers of ionised gasses) for periods from 1-5 hours.



As we talked about last month, the number and intensity of these flares have exceeded all of the official NOAA predictions, and with solar maximum not due until 2025, we have many years of interesting solar weather ahead. And maybe even a chance to try to understand the ionosphere a little better.

And so I come to the part in which I try to relate this to radio and realise that I probably cannot, instead, I can only relate it to people. as I walk this world, I am amazed by those who "Know" so much, they have absolute faith in the knowledge they possess, but as I walk with learned men, I find that I inherit their uncertainty about how much I do not know

It seems to work like this.

Take a circle and in it place everything you know to be true



Then around that draw, a bigger circle, and in there put in all the things you know you do not know



These are normally the things I am studying, and seeking to understand, they include ideas that may be hostile to what I thought I knew but have enough evidence to justify testing and evaluating, and there is a chance they may displace what I thought I once knew.

Finally, look at the area outside the bigger circle, and realise that this represents everything I do not know, that I do not know



The problem is, that the more I learn, the larger the inner circle becomes, but as it does, so too do the other circles. They increase, and I become more aware of how little I know, and more aware of how much I do not know.

This is also known as the Dunning-Kruger effect. In 1999 David Dunning and Justin Kruger did some research at Cornell University that proved a fact that we intuitively know; incompetent people generally overestimate their skills and abilities, while competent people underestimate their skills and abilities. The reason is precisely what we've been discussing, people who have small "know I don't know" circles think that they've basically mastered the topic at hand, while those with more experience are keenly aware that the world is complicated and there's much more to be learned about any given topic.

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1700			

"One of the painful things about our time is that those who feel certainty are stupid, and those with any imagination and understanding are filled with doubt and indecision." - Bertrand Russell



The wonderful thing about the Dunning-Kruger effect is that it's one of those things that, once you understand it, makes you less likely to be victim to it. Recognise that those who are willing to admit what they do not know, are much more likely to be very knowledgeable, while those who have absolute knowledge, are likely to have a very small circle of what they know they do not yet know.

Keep growing your circles! Delight in passing knowledge through the different membranes from unknown to known unknown to known. But question sources, don't trust anyone, ask "why", challenge everything, and never stop learning.

Gaining knowledge and sharpening your intellect are activities with zero downsides. You keep your faculties longer, you become a better family member, citizen, and human being, and you push forward towards a better future for us all. Keep pushing on the walls of those circles and let us see what's out there!

You may be surprised by what you find, and when you are surprised, then that's when the real fun begins.

de ZL1NUX

CAPSTONE MISSION BACK ON TRACK AFTER COMMUNICATIONS BLACKOUT

After spending nearly a day in the dark, NASA's CAPSTONE mission, a microwave oven-sized CubeSat, has re-established contact with mission officials, the US space agency has said.

"Mission operators have re-established contact with NASA's Cislunar Autonomous Positioning System Technology Operations and Navigation Experiment (CAPSTONE) spacecraft. Additional updates will be provided," NASA said in a statement.



"We have re-established communication with Capstone. The spacecraft looks happy and healthy. More details to come," said Advanced Space, the Colorado-based company that operates the mission for NASA, on Twitter.

Later reports revealed that a badly formatted message to the spacecraft, caused the radio systems to power down, and these were only restored later due to onboard diagnostic software, that detected the shutdown, and reset the radio systems

CAPSTONE flew to the Moon on June 28 aboard the Rocket Lab Electron rocket.

On July 4, the spacecraft left low-Earth orbit and began its solo journey to the Moon. However, a day later "the spacecraft experienced communication problems in contact with the Deep Space Network", NASA said.

Weighing only 55 pounds, the CAPSTONE spacecraft will serve as the first spacecraft to test a unique, elliptical lunar orbit. It is expected to reach the moon in November.

It will fly into cislunar space – the orbital space near and around the Moon. The mission will demonstrate an innovative spacecraft-to-spacecraft navigation solution on the Moon from a near rectilinear halo orbit slated for the Artemis Gateway.

Once freed from Rocket Lab's Photon satellite bus, Capstone will use its propulsion system to travel for about three months before entering orbit around the Moon.

After reaching the Moon, Capstone will begin its primary six-month-long mission. The mission will validate the characteristics of a near rectilinear halo orbit by demonstrating how to enter and operate orbit.

Those interested in following the CubeSat's journey can do so via <u>NASA's Eyes on the Solar System real-</u> time 3D data visualization tool, sometime in the next week or so.

Learn more about the CAPSTONE mission:

- <u>http://www.rocketlabusa.com/missions/lunar/</u>
- www.nasa.gov/directorates/spacetech/small_spacecraft/capstone
- https://nasa.tumblr.com/post/683165720838864896/capstone-testing-a-path-to-the-moon

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NZART NEWS

Update from the 54th meeting of the IARU Administrative Council

The meeting of the IARU Administrative Council (AC) was held in person at the Seehotel, Friedrichshafen, Germany, on Monday, June 20th, 2022 and Tuesday, June 21st, 2022

Much of the meeting was spent reviewing the work from the strategic planning working groups. After discussion, it was agreed that to improve the efficiency and timeliness of IARU decisions and actions, the goal of the planning sessions is to structure IARU as one single, global organization. It was further agreed the working groups must complete their work in time for the presentation of the design for change at 2023 IARU R1 Conference.

A draft letter to member-societies offering guidance on amateur satellites was approved. The AC added the importance of member societies contacting satellite builders as early as possible to ensure a smooth IARU frequency coordination. The importance of updated pre-launch data, as well as public available operational information after launch, was stressed. All contact with the IARU frequency coordination team should go to satcoord@iaru.org);

A proposed letter requesting support from the European Space agency was approved. The IARU Satellite Coordinator, Hans Blondeel-Timmerman, PB2T, was thanked for leading this initiative.

The AC agreed on advice and guidance to member-societies on footnotes to the International Radio Regulations as covered by WRC-23 agenda item 8. There was emphasis not to seek changes to any footnotes relating to 50MHz since these are from the recent WRC-19.

The AC similarly agreed on supporting Conference Preparatory Meeting text for WRC-23 Agenda Item 9.1 (b). In consultation with the AI 9.1 (b) leads, a news release and preliminary presentation on this agenda item was approved and released.

A review of the preliminary agenda items for WRC-27 was started and will be followed up by the officers.

The status of the grant requests to ARDC was reviewed and approved.

After a presentation, the AC authorized support for UN Human Security for All project.

A study of the issues relating to the international forwarding of QSL's between bureaus is ongoing. Succession planning was discussed with reference that the consultation process for the next round of elections for IARU president and vice president should start in the fall of this year.

Members attending the meeting were IARU President Tim Ellam, VE6SH/G4HUA; Vice President Ole Garpestad, LA2RR; Secretary Joel Harrison, W5ZN; Sylvain Azarian, F4GKR, President, and Mats Espling, SM6EAN, Secretary, IARU Region 1; Ramón Santoyo, XE1KK, President IARU Region 2,; and IARU Region 3 Chairman Ken Yamamoto, JA1CJP, and Director Yudi Hasbi, YD1PRY. Also participating was Assistant Secretary David Sumner, K1ZZ

CONFERENCE REGISTRATIONS:

A reminder conference registrations close Monday 8 August 2022. After this date a \$50.00 late fee will be required.

Note: This year's NZART Conference: Wellington will be held on the 10-11 September 2022.

The conference will be run in September. It will be a two day event with the ability to FIFO (Fly In and Fly Out) with only a single nights accommodation (for the Saturday) if this suits people to do so. There will be no Sunday evening meal with the conference concluding at 3:30 pm on 11 September 2022.

Timetable for Conference 2022 (TBC)

Saturday 10 September 2022

Registration opens: 8:30 am Morning Tea starts at 10:00 am (until 10:30 am) AGM starts at: 10:30 am Lunch 12:30 pm (until 1:30 pm) AGM resumes at 1:30 pm Afternoon Tea at 2:30 pm (until 3:00 pm) AREC Annual Meeting starts at 3:00 pm AREC Annual Meeting finishes at 5:00 pm Pre-dinner drinks starts at 6:30 pm Dinner starts at 7:00 pm

Sunday 11 September 2022

Forums start at 8:30 am with AGM's – OTC, SPAM, WARO Morning Tea starts at 10:00 am (until 10:30 am) Lunch 12:30 pm Forums start at 1:30 pm Forums finish 3:30 pm Conference ends at 3:30 pm

Alternative Programme will run on both days. It will commence at 10:30 am on the Saturday from the hotel and will return no later that 5:00 pm. On the Sunday it will commence after WARO AGM and conclude at 3:30 pm on the Sunday.

It is recommended you book your travel now as the best air fares and interisland travel options are now available.

Please ensure when registering that you complete the registration form that can be found on the NZART Conference web site, or in your latest Break-In.



CALL BOOK 2022/2023

NZART Council at their meeting in June, has made the decision that a Call Book will NOT be produced this year. This decision was based on the current deficit NZART is running for the 2022 Financial year.

NZART this year, has financially supported the District Plan Review in Porirua which required a substantial investment of funds. NZART Council agreed to this investment, as if Porirua had followed the Kapiti District Councils outcome, amateur radio in Porirua would be severely curtailed.

NZART Council believe that other Wellington region-based District Councils would look to Porirua's outcome and then use if for their own.

By standing against the Porirua District Plan and receiving a much better outcome, the whole of the Wellington Region has benefitted. This includes Wellington City, Lower and Upper Hutt cities, and the Wairarapa Councils. Titahi Bay Branch 42 has also contributed as much as possible, financially to the process, the costs were clearly beyond their ability to pay the full amount.

To ensure that members are not disadvantaged by this decision, the repeater maps and beacons will be reproduced via the NZART web site and where possible in Break-In. This will also include Branch and Club listings, also within Break-In where there is space to do so. This decision was to use NZART funds in this way was also signed off by NZART's Treasurer.

SIGNS OF THE TIMES?



PLANNED NASA MISSION TO THE 'IONOSPHERE' COULD IMPROVE SPACE WEATHER FORECASTS.

There is a layer of Earth's atmosphere that scientists know very little about. Dubbed the "ionosphere," this layer at the edge of space plays a huge role in determining the intensity of space weather events.

A new space mission is in the works that will attempt to shed more light on the processes that take place there, but it won't be ready before the current solar cycle ends.

When bursts of charged particles from the sun that form the solar wind hit Earth, strange things happen in the planet's gaseous coat. Those heavy particles (protons, electrons and heavy ions) collide with atoms in the upper atmosphere, energizing them, stated Juha Pekka Luntama, the head of space weather at the European Space Agency (ESA),

Most of this energy exchange happens in the thermosphere, the second-highest layer of Earth's atmosphere that extends between altitudes of 60 miles to 360 miles (100 to 600 kilometres). The excess energy warms up the thermosphere and makes it swell. The density of the thin gases that fill this region of space increases. In turn, satellites in low Earth orbit face more drag and sometimes prematurely fall to Earth.

"It's like running against the wind," Anja Stromme, the manager of ESA's Swarm mission, which recently experienced problems maintaining altitude due to bad space weather.



Most of these changes happen in the lowest layer of the thermosphere at altitudes of 100 to 200 km, just above the Karman line, a widely recognized boundary between Earth's atmosphere and outer space.

Scientists sometimes call this region "the ionosphere," due to the dearth of data collected there, as it's too high for balloons and too low for satellites.

Without these measurements, space weather forecasters have little means to improve their predictions of changes that happen in this region in response to solar flares and other sun eruptions. They have no way of providing proper insights to satellite operators whose spacecraft are at risk. In February this year, SpaceX experienced first-hand how serious this risk can be when it lost 40 brand-new Starlink satellites that were victimized by bad space weather right after launch.

"When we see an event on the sun, we can give a warning to satellite operators to be cautious and aware," Luntama said. "But it's very difficult to forecast exactly how big the impact is going to be and how much the atmospheric drag for the satellites will increase."

NASA and ESA have plans for a satellite mission that would help fill those gaps. Making such a mission work, however, is quite a challenge, as it would be at a very high risk of succumbing to the exact phenomenon it would be launched to study.

"The problem is that, in this region, around 150 kilometres [90 miles] from Earth's surface, there is still too much atmosphere to slow satellites down," said Luntama. "If you were flying a mission there, it would stay in orbit only for a short time, and then it would spiral into the atmosphere and burn."

The two space agencies want such a mission to remain in orbit for years so that it gets exposed to space weather events of various frequency and intensity. The frequency with which the sun produces sunspots, which are the source of solar flares and eruptions that affect Earth, varies based on the sun's 11-year cycle of activity. To ensure that such a mission keeps providing insights as the sun moves through this cycle, mission engineers have to very carefully design the spacecraft's orbit so that it makes only very brief dips into the low altitudes of the ionosphere while following an elliptical path.

"The perigee [the closest point to Earth] should be between 100 and 150 kilometres [60 and 90 miles] so that we can get the measurements," said Luntama. "The apogee [the farthest point from the planet] should be several hundreds of kilometres — 500 or 600 km [300 or 360 miles] — which is away from the atmosphere."

The spacecraft would circle the planet about every 90 minutes, Luntama said, using an onboard propulsion system to compensate for the loss of speed during the flight through the dense low-lying regions.

"We would like to measure the charged particles [of the ionoshphere] but also the density of the atmosphere in this region," said Luntama. "We also need information about the magnetic field of Earth, because that changes during solar storms. And lastly, we need precise information about how the atmosphere slows down the satellite."

The mission, however, is still in the planning stages and will not make it into the ionosphere before this solar cycle ends.

In the meantime, solar weather experts do what they can to improve their forecasts while the sun keeps exceeding their earlier predictions, producing many more sunspots, solar flares and eruptions than expected. After its first-hand encounter with the whims of space weather, SpaceX joined forces with the U.S. National Oceanic and Atmospheric Administration (NOAA) and started providing some basic data about the drag Starlink satellites experience during orbit-raising after launch.

NOAA uses this information to improve its Whole Atmosphere Model, which attempts to predict space weather near Earth just like meteorologists model weather on the planet.

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RESEARCHERS SET NEW WORLD RECORD FOR SOLAR CELL EFFICIENCY.

A German research team has developed a tandem solar cell that reaches 24 percent efficiency – measured according to the fraction of photons converted into electricity (i.e. electrons). This sets a new world record as the highest efficiency achieved so far with this combination of organic and perovskite-based absorbers. The solar cell was developed by Professor Dr. Thomas Riedl's group at the University of Wuppertal together with researchers from the Institute of Physical Chemistry at the University of Cologne and other project partners from the Universities of Potsdam and Tübingen as well as Helmholtz-Zentrum Berlin and the Max-Planck-Institut für Eisenforschng in Düsseldorf



Conventional solar cell technologies are predominantly based on the semiconductor silicon and are now considered to be "as good as it gets." Significant improvements in their efficiency – i.e., more watts of electrical power per watt of solar radiation collected – can hardly be expected. That makes it all the more necessary to develop new solar technologies that can make a decisive contribution to the energy transition. Two such alternative absorber materials have been combined in this work. Here, organic semiconductors were used, which are carbon-based compounds that can conduct electricity under certain conditions. These were paired with a perovskite, based on a lead-halogen compound, with excellent semiconducting properties. Both of these technologies require significantly less material and energy for their production compared to conventional silicon cells, making it possible to make solar cells even more sustainable.



As sunlight consists of different spectral components, i.e. colours, efficient solar cells have to convert as much of this sunlight as possible into electricity. This can be achieved with so-called tandem cells, in which different semiconductor materials are combined in the solar cell, each of which absorbs different ranges of the solar spectrum. At the start of the project, the world's best perovskite/organic tandem cells had an efficiency of around 20 percent. Under the leadership of the University of Wuppertal, the Cologne researchers, together with the other project partners, were able to increase this value to an unprecedented 24 percent.

The researchers in Cologne played a key role in assessing the energetic and electrical properties of the interfaces and the interconnect in order to identify loss processes and further optimize the components. Simulations by the group in Wuppertal showed that tandem cells with an efficiency of more than 30 percent could be achieved in the future with this approach.

HAPPY BIRTHDAY GEORGE

Roughly 50 years after the first episode of "The Jetsons" premiered, fans are gearing up to celebrate the birth of George Jetson, which according to lore, is July 31, 2022. But is that really his birthday?

On Thursday, a hawk-eyed fan pointed out that "someone is about to give birth" to the show's main character, via a fan site listing the family patriarch's exact birthdate.

The animated sitcom created by William Hannah and Joseph Barbera took place in the 21st century. Although no mention to a specific year was ever made in the show, promotional materials and articles from the time explained that it was set exactly 100 years in the future, according to MeTV.



Further evidence can be found in the episode "Test Pilot," which aired Dec. 30, 1962. When Jetson's doctor tells him he "should live to be 150," he replies, "I've got 110 good years ahead of me!" – making him 40 years old.

If that makes you feel old, you're not alone. In light of the news, the internet has been reflecting on their feelings about the show and how they wished reality mirrored its version of the future.

Starring George O'Hanlon, Janet Waldo, Mel Blanc, Penny Singleton, Daws Butler, Don Messick, Jean Vander Pyl, Frank Welker and Howard Morris, "The Jetsons" initially ran from 1962-1963 before it was revived in 1985 for 51 more episodes. It was the first show ABC broadcast in colour. In 1990, Hanna-Barbera directed "The Jetsons: The Movie," and since then, the characters have made appearances in shows and films like "Space Jam: A New Legacy."

Meanwhile I'll keep waiting for Robot Maids, and Flying Cars, but it's nice to know the future is here. Or at least only 40 years away.

GENERAL NEWS

HAMILTON AMATEUR RADIO CLUB MARKET DAY

- Date: Saturday 20 August 2022
- Venue: Gordonton Hall
- Address: 1024 Gordonton Road SH 1B
- Vendors: Access from 8:00 am
- Opens: Selling commences 10:00 am
- Fee: \$2.00 entry/raffle
- Contact: Robin ZL1IC (021 127-9998)
- Call In: 146.525spx

CAN YOU HELP?

I am looking for any Morse code key collectors amongst you, can you please contact me. I am looking for a NZ-made AKRAD or ULTIMATE Morse key. I am happy to purchase or to exchange for a British Bathtub key.

Regards, Herman Willemsen VK2IXV

email: hermanusw@gmail.com

+61 434 510 308



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SOME NETS - FOR WHEN YOU ARE LOOKING FOR SOME COMPANY

Day	Time (Local)	Freq (MHz)	Group
Sunday	08:00	3.750	Southern Net
	09:00	3.700	Bch 10. Franklin.
	09:15	3.755	Bch 65. Papakura.
	16:00	7.125	SPAM Net (AM Mode)
	19:00	146.625	YL Net
	20:00	3.710	Bch 42. Titahi Bay
	21:30	3.595	Duran WIA Net.
	40.00		
Monday	19:30	3.757	Bch 12. Hamilton
	20.00	3.540	CW Practice Net
updated	20:00	3.605	Br 80. Hibiscus Coast
updated	20:00	Nat System	W.A.R.O
	20:30	3.870	O.T.C (Old Timers Club)
Tuesday	09:00	7.096	Ex Post Office Techs
	21:00	1.850	160m Net _ Ron ZL4JMF
	19:30	3.690	QRP ZL2BH
	20:00	3.581	CW improvers Net
Wednesday	20:00	3.660	Geek Net
	20:00	3.645	Bch 02. Auckland
	20:00	3.745	Bch 84. Bay of Islands
	20:30	146.525	W.R.S.C
Thursday	09:00	7.096	Ex Post Office Techs
	19:30	3.690	QRP ZL2BH
	20:00	3.540	CW Practice Net
	20:00	3.615	Bch 89. REG Net
	20:30	3.696	ZL1OA
	20:30	3.666	LF Net ZL2CA
	20:00	3.690	ZL QRP SSB Net
Friday	20:00	3.850	SPAM (AM Mode)
	20:30	3.650	W.S.R.C.
	20:30	3.560	Digital Modes Net
Saturday	10:30	28.530	10-10 Down Under
	19:30	3.650	
	20:00	3.760	
	20:30	3.600	Ch 62. Reefton/Buller
Daily on Other	07.20	2.606	71 20 4
Daily of Other	07:30	3.090	
	15:00	3.730	ZLJKP De sifie Conference
	15:00	14.300	Pacific Seafarers
	17:30	3.760	Home Brew
	10:00 ZUIU	14.183	
	18:00	/.115	
	19:30	3.720	
	18:30	3.766	
	08:30/20:00	3./30	
	20:30	3.725	ZL2HN / ZL4RF
	21:00	3.677	Counties Net ZL2MA
	21.00	3.535	New Zealand Net (CW)
	i nis is designe	ed to be a living lis	t, Please update whenever you are able:

Also: Calling Frequencies: Daily Sunset-Sunrise 3580 USB NZ FSQCall Courtesy of Murray ZL1BPU 7105 USB NZ FSQCall Daily Sunrise-Sunset 24/7 7104 USB International FSQCall Daily

I'm told the last of these sees some amazing DX, especially around sunset.

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Papakura Radio Club Inc. Branch 65 NZART Club Directory 2017 Wellington Park, 1 Great South Road. PO BOX 72-397 Papakura 2244 PHONE 09 296 5244 Westpac 03-0399-0019896-00 Club website: <u>http://www.qsl.net/zl1vk</u> Club email: zl1vk.club@gmail.com

ZL1NUX	Gavin Denby	021 459 192
ZL1BNQ	Richard Gamble	021 729 270
ZL1AOX	Ian Ashley	021 198 1810
ZL1MR	David Wilkins	021 185 7903
ZL1DK	David Karrasch	021 560 180
ZL1IRC	Ian Clifford	021 082 48400
ZL1ASN	Rolly Adams	021 042 7760
ZL1RAH	Rodger Hanson	027 568 7659
ZL1RIC	Ricky Hodge	027 533 8155
ZL1BNQ	Richard Gamble	021 729 270
ZL1AOX	Ian Ashley	021 198 1810
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Contact:	zl1nux@outlook.com	
	ZL1NUX ZL1BNQ ZL1AOX ZL1MR ZL1DK ZL1DK ZL1RC ZL1ASN ZL1RAH ZL1RIC ZL1BNQ ZL1AOX ZL1NUX ZL1AOX ZL1AOX Contact:	ZL1NUXGavin DenbyZL1BNQRichard GambleZL1AOXIan AshleyZL1MRDavid WilkinsZL1DKDavid KarraschZL1IRCIan CliffordZL1ASNRolly AdamsZL1RAHRodger HansonZL1RICRicky HodgeZL1BNQRichard GambleZL1AOXIan AshleyZL1NUXGavin DenbyZL1AOXIan AshleyZL1AOXIan AshleyZL1AOXIan Ashley

Our newsletter is published monthly and normally distributed just before the club meeting. Please forward articles etc to the editor Wednesday 1 week before the general meeting. Please notify any change of address. Including E-Mail Address to the secretary.

Meetings

Elected Officers

General Meetings are held at the Clubrooms on the 1st Wednesday of each month, starting at 7.30 pm. Look at your calendar and mark these nights. The speaker follows the General Meeting.

Project Evenings are on the 4th Wednesday of each month.

Committee Meetings are held on the 3rd Wednesday of each month at 7.30 pm unless advised.

Activity Nights are held on the 2nd Wednesday starting at 7.30 pm.

AREC Meetings are on the 5th Wednesday night, also starting at 7.30 pm **AGM:** Held in November

Subscription: Full membership and newsletter\$25.00Family Membership and newsletter\$40.00Bank Account number: 03-0399-0019896-00\$40.00

Working Bees As required.

Branch 65 21 Award: For contacts with ZL1VK (5 Points) and 8 Papakura Radio Club Members (2 Points each) after January 2011. Total 21 Points. Cost \$5-00. Certified list and \$5-00 to Secretary, Papakura Radio Club. Address above.

ZL1VK Club Nets

146.900 MHz Sunday at 8.30 am. Controller ZL1NUX, Gavin Denby. If the repeater is not available, listen 146.475MHz simplex.

3.755 MHz Sunday at 9.15 am. Controller ZL1BNQ Richard Gamble. (Linked to 146.675 & 438.775)

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