

"DRUMLINS RUMBLINS" - FEBRUARY 2025



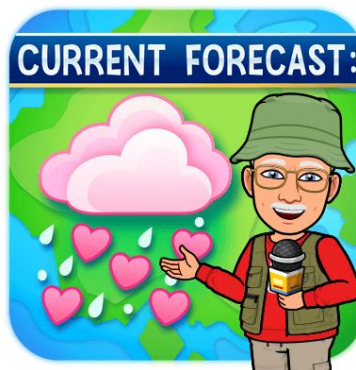
WE'RE meeting at the WAYNE COUNTY SECOND FLOOR EOC ROOM
Wayne County Public Services Building 7227 Rte 31 Lyons NY 14489

WEDNESDAY FEBRUARY 19th MEETING START 7:30PM

REMEMBER: The front door and the EMO entrance will be unlocked from 6:30-7:30pm.
So arrive in this time period for an easy entry.



*****YOU HAVE A LITTLE LEEWAY TO GET IN UNTIL 7:55PM!



->->->->->**WINTER TIME !!!!!!!!!!!!!!!**

BAD WEATHER! WATCH THE CLUB EMAIL FOR MEETING CANCELLATIONS!!!!!!

I have at least all the Pumpkin Patrol DARC members' cell numbers in my cell directory. That would be a good 95% of DARC members. If for some reason you can't get to an email device you may text me on my **cell number** (315-871-8767), beforehand. I will get on the 685 (The leaves are gone.), and 745 **repeaters** for **announcements** at least on the half hours, too. There is nothing important enough for a DARC meeting for any members to go out in nasty WX.

During times of bad weather and driving conditions, keep an ear on the local repeaters in the area. Who knows there may be a ham needing help. <<<<<<<<<<

PRESIDENT'S KORNER



That rodent in PA-land saw his shadow-again. Hi hi. So, there are six more weeks of winter. (As far as the calendar seasons go, it is always 6 weeks, by the way to spring from February 2nd. Sorry to have to tell that. Hi hi.) They just gave some stats on the weather showing the past 31 days, the temperature the number of those days at 32 degrees or lower was 21. We had only 24 freezing and below temps last winter. So if you think it has been a cold winter, it has been more normal and our snowfall total with only a couple inches off the seasonal average. **SO-IF THE WEATHER ON A CLUB MEETING NIGHT LOOKS IFFY-MAKE SURE TO LOOK AT YOUR EMAIL INBOX.**

At our January meeting, we had a surprise "eyeball QSO" from **Glenn Bruemmer KC2YGH** and Budd. It was a nice surprise, naturally. Glenn, also, became a DARC "Life Member" at the meeting, as well. Where the heck my brain has been, I didn't realize that Budd was still in the area. Duh. Sorry Budd. Glenn visiting from MO-land is no easy trip. It was nice to catch up a little with both of them. I told Glenn I would add his email address on with the club Google email to make sure he gets the DARC newsletter. By the way, Jay KC2TNJ is working another club email address "thingy" to get away from the Google problems we have having. Thanks, Jay.

Another "duh!" it has been brought to my attention **Dave KD2VNV Lubberts**, also, became a "Life Member" of DARC a few months back. I apologize, Dave. How I missed this? Everyone must remember, when it comes to club stuff my other half of my brain, a.k.a. my XYL, is not there to remind me. So any help by any club members to keep your thick brained President informed and up to date is much appreciated. Even a reminder of a reminder is even appreciated, too. No joke. Hi hi.

I got a call from Mike Dengalus of the Newark Water Department about the 745 repeater site. Verizon is going to be added or expand on the 745 repeater site which is on the hill with the Newark water tower on Rte 88 South. Whichever it is I am not sure but I had Mike contact our Jeff N2MKT since Jeff is our repeater guru for both the WA2EMO and WA2AAZ repeaters. More will be coming as we know more, etc. It sounds like we could benefit from the Verizon project. It was hinted Newark and us could be linked into the emergency power of Verizon. We will pass the info on as we get it.



Remember this little RTTY ditty playing Jingle bells at the January meeting? Well, the next breakfast I had with the Harris Radio ham group on Saturday mornings, I asked K2OEQ Duncan if he was the one in the AWA video chip. He said, "Yes." I thought it was Duncan, our own DARC member. "FB."

| | |
|--|--|
| Same Location | Contact person: Rich Hamill KC2TNJ (215) 984-8289 Palmyra VFW Post 6778 4306 Route 31, Palmyra, NY 2 miles east of Palmyra 7 miles west of Newark |
| 38th ANNUAL DRUMLINS HAMFEST |  TALK-AR 148-745 PA 714 |
| NEW DATE | Electronics - AMATEUR RADIO GEAR - Computers Breakfast - GRAND PRIZE - Door Prizes Admission \$5.00 Indoor Tables (6 ft.) \$5.00 Outdoor Tailgaters FREE |
| APRIL 19, 2015 | We're looking forward to the April Hamfest this year! |
| WEBPAGE Drumlinsarc.us For Tables: Rich Hamill, KC2TNJ (215) 984-8289 Email: Hamfest@drumlinsarc.us | http://drumlinsarc.us/hamfest-info/ |

DARC HAMFEST APRIL 19TH

HELP THE CLUB, PLEASE!

Rich KC2TNJ organizes our hamfest. Please, pay attention to his emails for Friday before the hamfest and the Saturday hamfest for helping out. You are a DARC member **you can help** contribute. Even your almost physically poor President does what he can. If I can help even in my small way, you can too.

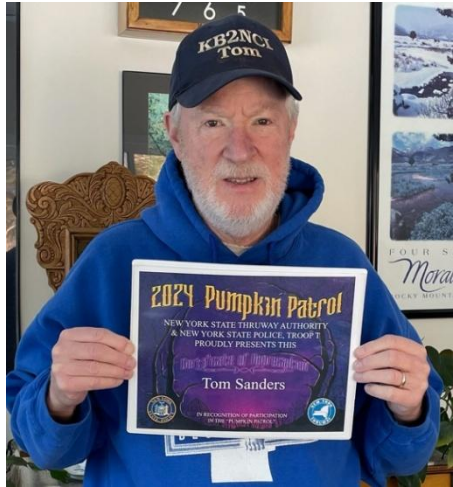
2025 MEMEBERSHIP REMINDER

Hi, It's that time of year again. **Dues are do**. \$10 can be paid on the website. Thanks, Harold W2HJC (**TNX, Harold**). We tend to forget about these smalls things. That's what the XYL says to me all the time.)



RACES-ARES FEBRUARY 2025





Did you get your **Pumpkin Patrol** certificate like Tom KB2NCI??? I hope you did. Of course once again, thanks to all you SIARC and DARC members that helped with the 2024 season. Tom was nice enough to put a sked in the SIARC "Smoke Signals" which I copied and posted here in the "Drumlins Rumblins: "(TNX, Tom.)

Public Service Events for 2025:

April 26—**Wild Water Derby**, Shortsville

April 27—**Seneca 7 relay** run race around Seneca Lake

June 7—**Tour De Cure**, Stokoe Farms, Scottsville (details at www.rochesterham.org)

June 13—Shortsville Fire Department **Parade**

July 13—**Musselman** Ironman, Geneva

August 2—Phelps **Sauerkraut Festival** Krauter races

September 7—Finger Lakes **Triathlon**, Canandaigua

October 5—**Wineglass Marathon**, Steuben County

October 30 and 31—**Pumpkin Patrol**, Thruway bridges

ARRL Field Day is June 28 and 29- Big M Game Club in Clifton Springs

The **New York State RACES net** is held each Sunday morning at 9am on 7281khz LSB and members are always welcome to check in and get more training on HF net operations.

The net follows the same procedures that our weekly nets do. A digital message is sent afterwards on 7081.5kHz USB using Olivia 8-500, MFSK 32 and Thor 22. Forty meters has worked very well, so for the time being, the net will remain there. We are in Region 5 (check in is by region) and we are always very well represented. Give it a try! NYS RACES

is also doing testing on 60 meters. It is a great band for these regional communications, so

all members should have that capability

Amateur Radio Emergency Preparedness Act Re-Introduced

02/07/2025

Legislation Will Increase Communication Options During Natural Disasters

WASHINGTON – U.S. Senators Roger Wicker, R-Miss., and Richard Blumenthal, D-Conn., and Representatives August Pfluger, R-Tex., and Joe Courtney, D-Conn. announced their joint re-introduction of legislation in the Senate and House to restore the right to Amateur Radio operators to install the antennas necessary to serve their communities.

Homeowner association rules often prevent Amateur Radio operators from installing antennas at their homes even though Amateur Radio has proven to be essential in emergencies and natural disasters such as hurricanes when other means of communication fail.

“Mississippians should have access to every possible means of warning for natural disasters, including amateur radio operators. In an emergency, those warnings can mean the difference between life and death,” **Senator Wicker said.** “The Amateur Radio Emergency Preparedness Act would remove unnecessary roadblocks that could help keep communities safe during emergencies like tornadoes, hurricanes, and fires.”

“When disaster strikes, amateur radio operators provide vital, often life-saving information, which shouldn’t be hindered by prohibitive rules or confusing approval processes. The Amateur Radio Emergency Preparedness Act eliminates obstacles for ham radio enthusiasts, allowing them to continue their communications and serve their communities in the face of emergencies,” **said Senator Blumenthal.**

“Natural disasters and other emergency situations that hinder our regular lines of communication are unfortunately unavoidable, which is why we must bolster our emergency preparedness by removing the barriers amateur radio operators often run into when installing antennas. Amateur radio plays a vital role in public safety by delivering critical information to people at all times. My district is home to dozens of amateur radio operators ready to volunteer in the event of an emergency, and I am proud to lead this legislation,” **said Congressman August Pfluger.**

“As we know from recent natural disasters, amateur radio operators in Connecticut can be a critical component of disaster response and emergency management. It is in our communities’ best interest that we give them the capabilities to operate at the highest level, and with the re-introduction of this bill, we’ve taken a strong step in that direction,” **said Congressman Courtney.**

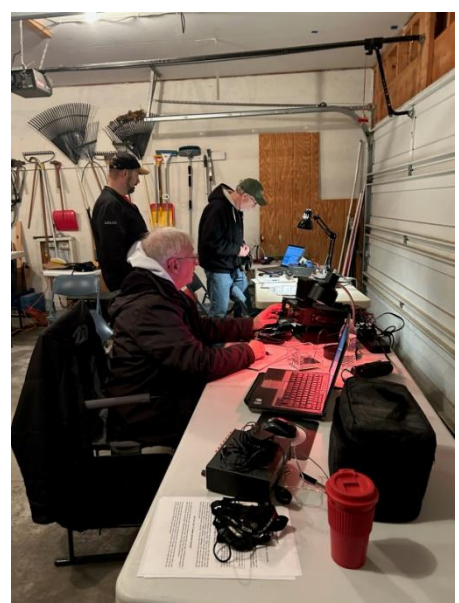
Background:

The Amateur Radio Emergency Preparedness Act of 2025 (H.R. 1094 and S. 459) would require homeowner associations to accommodate the needs of FCC-licensed Amateur Radio operators by prohibiting the enforcement of private land use restrictions that ban, prevent, or require the approval of the installation or use of Amateur Radio station antennas. Homeowner associations have often prevented installation and use of such antennas through private land use restrictions. This has hindered voluntary training for emergency situations and blocked access to necessary communications when disaster strikes.



Which is a Monday just before our March meeting. Enjoy.

WINTER FIELD DAY 2025: I am sorry to say, I missed the WFD at KB2NCI Tom's QTH January 25th. I got a serious sinus infection. Yes, the whole urgent care visit (My local doc's sked was full with visits.) Rx and 9 days later I finally recovered. This "thing" was worse than any sinus infection even when teaching. Jay KC2TNJ and Sabrina WD2STK were kind to take pictures for me of WFD. TNX, you two. One goofy thing, Tom KC2NCI pointed out in my January article on WFD, I had put the letters WPA in the article. WPA? Hi hi. Embarrassed? I sure was. What the heck? I stopped teaching 8th grade American History way back in 1985, I think. So long ago I cannot remember. Me not remember? Well, WPA, the Works Progress Administration of President Roosevelt's time prior to WW2 to get the country out of the Great Depression. Where the blazes did that come out of the brain! Hi hi. Oh well, it was a good laugh. TNX, Tom, for the giggle. Here are the pictures:



Oh yes, it sure was winter. Hi hi. But using Tom's garage and a little heat the conditions are pretty good.



As with any field day event, you can tell there is always serious hamming going on. Hi hi. Fun stuff. Hope for next year.

[It is not just ham articles you see interest in amateur radio. Look at this article out of Montana!]

Amateur radio hobbyists tune in at winter field day

Amy Quinlivan, Clark Fork Valley Press & Mineral Independent, Plains, Mont.
Wed, January 29, 2025 at 11:59 PM EST

Jan. 29— Amateur radio, or ham radio, has been a popular hobby throughout the years as well as an important service that brings people, electronics and communication together.

People are able to use ham radio to talk across town, around the world, or even into space, all without internet or cellphones. You can communicate from the top of a mountain, the comfort of home or behind the wheel of your car,

you can take radio wherever you go. This intriguing hobby is not only a fun way of socializing, but it can also be a lifeline during times of need.

Ham operators get involved for lots of reasons, but to start they need a basic knowledge of radio technology and operating principles and pass an examination a Federal Communications Commission examination to receive a license to operate on radio frequencies known as the amateur bands. These bands are radio frequencies assigned by the FCC for use by ham radio operators. In 2022, it was reported that there were approximately 700,000 licensed U.S. ham operators and nearly 3,000,000 hams worldwide.

One local ham radio enthusiast, Lyle Holyoak, is taking his passion for long distance communications and is in the process of forming a club, based out of the St. Regis Senior Center.

"With approximately 50 amateur radio operators in Mineral County, I have been wanting to have a radio club here in the county as the nearest clubs are outside the county with the closest clubs meeting in Missoula or Plains," he said.

Holyoak is the current president of the Clark Fork Valley Amateur Radio Club in Plains. He and his family have been volunteering at the St Regis Senior Center, and they came up with the idea of utilizing their conference room for group meetings.

"Right now, we are just a loose club with no formal organization," explained Holyoak. "That will change as we get a few others involved and decide how we want to organize. I don't want it to be Lyle's radio club. I want it to be a club where I can come and have fun with radio, but also help others have fun with radio."

His goal is for the monthly get togethers are to encompass all aspects of amateur radio.

Holyoak said, "If there is an interest in a group that wants to do emergency communications, great. If there is a group that wants to build kits and put antennas together, great. If there is a group that wants to get together and activate or chase parks or summits, great."

Holyoak slowly tuned into ham radio over many years, but dating back to when you could wander around a Radio Shack.

"I remember entering a science fair in junior high with a friend where we built an AM radio and transmitter out of a couple of the Radio Shack kits," he said. "At that time, I did not pursue amateur radio as a hobby, though I was aware that an uncle was licensed as an amateur radio operator."



Was this your Valentines Day as a ham? (Hi hi)



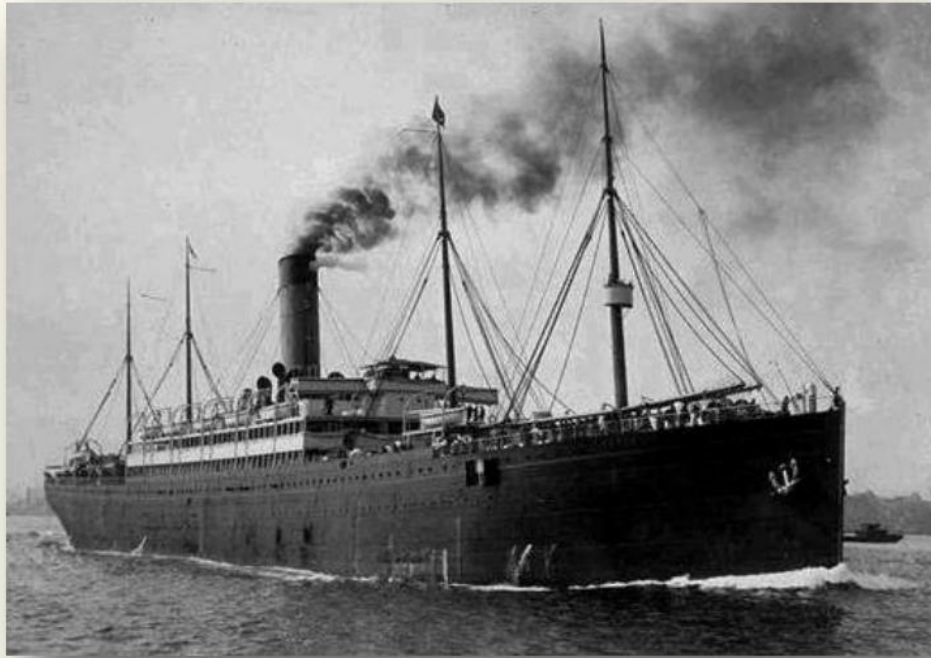
STILL GOING STRONG!!!. Kudos, Tom! Get acquainted with some of our SIARC friends and the surrounding counties. **Thank you, Tom, for being so patient and sacrificing your time.**

Tom's SIARC health and welfare net is open to all hams that can hit the **146.820 repeater (tone 110.9)**, either mobile or from your QTH. Just listen to Tom's or the NCS's instructions always given first as the net starts like we all know as hams and used to a SOP. So listen for the SOP at the beginning of the net. Only the third Wednesday of the month, the SIARC meeting night, is there no net.



PICTURE THE EARLY 20th CENTURY, when what was then simply called **Wireless**—what we now call radio—was still in its infancy. Ships crossing the oceans then began to rely on this marvel of technology to communicate. But most folks today probably first think RMS Titanic when considering early radio rescue efforts involving ships. But there was a prior event that really proved radio's worth in a big way. It was in the very early morning hours of January 23, 1909, when a ship-board wireless set saved hundreds of lives in the first-ever radio rescue at sea. The **RMS Republic**, a White Star ocean liner launched in 1903, while somewhat smaller, was in many ways just as luxurious as Titanic would later be.

She was then the flagship of White Star Line's Boston service. Republic was 570 feet long and displaced 15,400 tons, compared to Titanic's 882 feet and 46,000 tons but regardless, she was equipped with very luxurious accommodations, carrying close to 2800 passengers and crew. In every way, Republic was as resplendent a ship as Titanic later would be, regardless of the difference in size. This event of course involves an incident at sea, and unlike Titanic with her iceberg, Republic would instead encounter another ship, the SS Florida, and ultimately meet her demise. The Florida, by contrast,



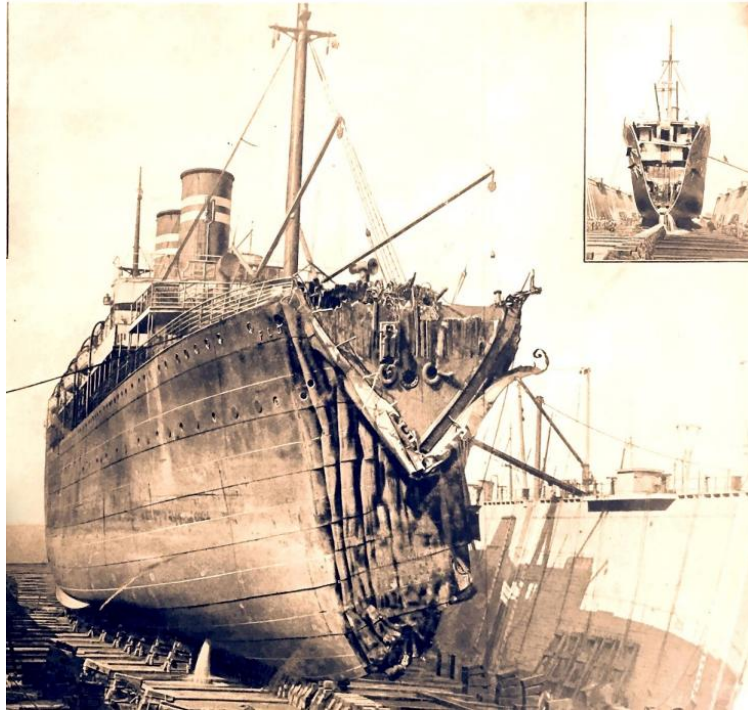
White Star Ocean Liner RMS Republic

was much smaller at 400 feet long and 5,018 tons. Operated by the Italian Lloyd Italiano line, it was primarily a workhorse vessel packed with immigrants journeying to America. In the pre-dawn hours of **January 23, 1909** off Nantucket, Massachusetts, the two ships collided in dense fog. The Florida rammed the Republic, punching a massive hole in her starboard side. The Republic's engine room flooded rapidly, leaving her dead in the water. The Florida, though badly damaged, remained afloat but faced her own peril. With visibility near zero and the sea filled with debris, finding help seemed impossible. Here's where Jack Binns entered the story. The 25-year-old Marconi wireless operator aboard the Republic worked quickly, firing up the ship's Marconi-built transmitter and receiver. At the time, the SOS distress signal had only recently been introduced and wasn't yet widely adopted. So instead, Binns sent the older "**CQD**" signal, meaning "All stations: Distress," repeatedly tapping out the ship's location and the nature of the emergency in Morse Code.

Binns' signals were picked up by several ships, including the Baltic, another White Star Line vessel, larger than the Republic at 723 feet and 23,876 tons. Guided by Binns' precise transmissions, the Baltic navigated through the heavy fog toward the Republic. Without wireless telegraphy, such a coordinated rescue effort would have been nearly impossible under these conditions. The Republic's distress call set off a race against time. The liner was slowly sinking, though it stayed afloat long enough for the Baltic to arrive and transfer passengers and crew to safety. Meanwhile, the Florida managed to limp toward port, aided by other ships responding to the CQD signal. This **first-ever radio rescue** underscored for the **first time the usefulness of wireless telegraphy** in maritime safety. Before radio, a ship in distress was effectively cut off from assistance, relying on chance encounters or flares to attract attention. Now, even in dense fog and miles from shore, help could be summoned quickly and efficiently. Jack Binns became an international hero, celebrated for his composure and skill under pressure. His actions demonstrated the necessity of equipping ships with reliable wireless systems, a move that soon became mandatory in the maritime industry for all ships. Despite the efforts of Republic's captain Sealby and a small skeleton crew to save her, on January 24th Republic sank stern first. At 15,378 tons, she was the largest ship ever to sink before. All remaining crew were saved before she went down. Though the Republic was ultimately lost to the sea, the lives of her passengers and crew were saved, thanks to the ingenuity of radio and the bravery of young operator Jack Binns. As for the Florida, she limped to port and was repaired quickly—just 24 days after the collision—and returned to service. Renamed Cavour in 1911, the ship served in a similar capacity until

1917 when, as her fate would have it, she again collided with another vessel, the Caprera, and sank near Armevilla, Italy. Thankfully, all aboard survived, marking the end of a storied career for this resilient vessel. Thus ended the first rescue at sea that was facilitated by radio. Titanic in April 2012 would not be so fortunate. -Dave W7UUU [Editor note: The letters **SOS** do not appear in any word spelling in the English language. So, it is very distinctive, thus, also, why used.]

Ss Florida after collision in drydock.



Hurricane Watch Net Turning 60, Seeking Net Control Operators



The [Hurricane Watch Net \(HWN\)](#), founded on Labor Day weekend 1965, is celebrating its 60th anniversary in 2025. The net, known for relaying surface observations into the National Hurricane Center, is also seeking volunteers to serve as net control operators.

Net Manager Bobby Graves, KB5HAV, reports HWN is preparing for what could be, yet again, an above-average hurricane season and that the net needs more amateur radio operators to help.

“We are starting early this year in preparations and looking to add more net control stations to our roster,” said Graves. “We are looking for dedicated new members willing to train to become net control operators (NCOs). While being bilingual is not a requirement, being fluent in Spanish and English or French/Creole and English is a plus.”

If you are interested in training to become a net control operator for the Hurricane Watch Net, please visit the net control information page, hwn.org/about-us/ncs_info.html.



ST. PATRICK DRIVING THE SNAKES OUT OF IRELAND



[Your editor found this fascinating. How is this possible? Remember, transmitting and receiving Morse code is a miracle to me.]

NASA finds key molecules for life in **OSIRIS-REx asteroid** samples. Here's what that means [News](#) By [Monisha Ravisetti](#) published January 29, 2025

"For me, the question is: Why didn't life form on Bennu?"



Asteroid Bennu, from which NASA collected samples with OSIRIS-REx. (Image credit: NASA/Goddard/University of Arizona)

There are 20 amino acids that create the proteins required for life on our planet — and scientists have now found exactly 14 of them on an asteroid millions of miles away. The asteroid in question, named Bennu, was the focus of a very dreamy NASA mission called OSIRIS-REx that launched in 2016.

The first goal of [OSIRIS-REx](#) was to blast a spacecraft toward the grayish, lumpy object and get it really close to the surface so the probe could pluck up some space rock samples with a robotic arm. The second goal was to seal those samples within the craft for the long journey back to Earth in order to safely bring them down through our planet's atmosphere. In other words, OSIRIS-REx was meant to deliver untouched asteroid chunks home to be analyzed in a lab. This brilliant plan worked. The samples [landed in the Utah desert in 2023](#), and scientists have been wringing those priceless pieces of Bennu for data ever since.

So far, they've managed to reveal things like the fact that [asteroid Bennu](#) — a space rock representative of the early [solar system](#) — appears to hold compounds containing [water and carbon](#). However, that was more or less expected (or at least actively hoped for as corroborative evidence of scientists' Bennu theories). The team's latest discoveries, which NASA unveiled on Wednesday (Jan. 29), come as a bit of a surprise, and pose many exciting questions. The most notable parts are probably that researchers found those aforementioned 14 amino acids, a high concentration of ammonia, and the five nucleobases life on Earth uses to transmit genetic instructions within DNA and RNA.

[Click here for more Space.com videos...](#)

"For me, the question is: Why didn't life form on Bennu?"

Nicky Fox, associate administrator, Science Mission Directorate, NASA Headquarters, Washington

"Their findings do not show evidence of life itself, but they do suggest that the conditions necessary for the emergence of life were likely widespread across the early solar system," Nicky Fox, associate administrator, Science Mission Directorate, NASA Headquarters, Washington, told reporters during a Jan. 29 press conference. "This, of course, increases the odds that life could have formed on other planets."

You may like

- [Dramatic sampling shows asteroid Bennu is nothing like scientists expected](#)
- [How comet Hale-Bopp can reveal the origins of life on Earth — and maybe beyond](#)

Forbidden broth

There were several other reveals about the Bennu samples during this press conference, and it's notable that pretty much all of them suggest the asteroid had the right ingredients for life as we know it. This seems to provoke a big question for scientists: Why didn't life form on Bennu?

"This is a future area of study for astrobiologists from around the world to ponder," said Jason Dworkin, OSIRIS-REx's project scientist at NASA's Goddard Space Flight Center in Maryland. "Looking at Bennu as an example of a place that had all the stuff, but didn't make life — why was Earth special?"

For instance, scientists identified evidence of a salty brine, or "broth," with traces of 11 minerals rich in sodium carbonate, phosphate, sulfate, chloride and fluoride.

"We see this huge range of salts," said Sara Russell, a cosmic mineralogist at the Natural History Museum in London. "We believe we're finding the story where, together, the water, the organic material, and all of these bioessential elements could have been delivered on asteroids like Bennu in the early solar system, to the Earth and to other planets as well, to enable them to be seeded with all the ingredients they needed to kickstart life."

The team also specifically found ammonia — a lot of ammonia — in the Bennu samples. They found about 230 parts per million of it, which Danny Glavin, senior scientist for sample return at NASA's Goddard Space Flight Center Greenbelt, Maryland, puts into perspective as about 100 times more than natural levels of ammonia in the soils on Earth.

"Ammonia is, of course, essential for many biological processes," Glavin said. "It was likely a key chemical building block through the formation of amino acids and nucleobases and, again, the genetic components of DNA and RNA."

The OSIRIS-REx team says this suggests Bennu — or at least the parent asteroid from which Bennu is believed to have broken off — must have once existed in the colder, outer regions of space because ammonia is a volatile substance. For ammonia to exist in salt form, the environment must be cold. As such, scientists have also previously found evidence for ammonia in salt form on the [dwarf planet Ceres](#), which sits in the asteroid belt between Mars and Jupiter, and within the plumes of Saturn's famously icy moon [Enceladus](#). Over the years, Enceladus has gained much-deserved [attention](#) in the quest to find life beyond Earth.

Perhaps Fox summed it up best: "The OSIRIS REx team discovered that Bennu contains many precursor building blocks of life, along with the evidence that it comes from an ancient wet world and contains materials that point to Bennu having traveled from the coldest regions of the solar system that are likely beyond Saturn's orbit."

A hypothesis, thwarted

In a separate train of thought — and my personal favorite Bennu discovery so far — the OSIRIS-REx sample analysis also communicated something peculiar about the "chirality" of molecules found in the Bennu samples. A chemistry term, chirality basically refers to the orientation of a molecule. A molecule is considered "chiral" if it can't be superimposed on a mirror image of itself no matter what you try to do. This means that there must be two versions of that molecule, a left-handed version and a right-handed version. (Think about your own left and right hands. If your palms are facing upward, they follow this principle, too).

"All life on Earth is based on the left-handed form," Glavin said. "And this is a big mystery, actually ... we don't know how this happened."

As Glavin explains, scientists have been studying meteorites for decades, checking space molecule handedness to compare that with our Earth molecule handedness — and they consistently seem to find that meteorites, especially with similar compositions to Bennu, exhibit predominantly left-handed molecules. But meteorites don't get the princess treatment that Bennu samples did. They're, more or less, contaminated by all the stuff they pass through before hitting our planet.

"The hypothesis had been that the early solar system was biased towards the left-handed version, very early on, prior to the origin of life," Glavin said. "So we were looking forward to studying these better samples, hopefully confirming that hypothesis."

But Bennu bucked the trend. The team found equal parts left-handedness and right-handedness in their OSIRIS-REx samples, referred to as a "racemic" mixture.

"I have to admit, I was a little disillusioned or disappointed," Glavin said. "I felt like this had invalidated 20 years of research in our lab and my career. But I mean, here's the thing: This is exactly why we explore. This is why we do these missions, right? If we knew everything in advance, we wouldn't need to do an OSIRIS REx to bring these samples back."



OSIRIS-REx touching down on asteroid Bennu. (Image credit: NASA)

What's new and what's not

There are a few things worth noting when it comes to the novelty of OSIRIS-REx. First of all, this is not the first time scientists have brought space samples back to Earth for analysis — looking at you, [Apollo moon rocks](#) — and it's also not the first time asteroid samples in particular have landed on Earth with human intervention. In fact, it's not even the first time we've found these tantalizing building blocks of life on an asteroid at all.

OSIRIS-REx, however, does have its own reasons to boast.

For instance, the first-ever space-rock-sample-return mission was performed by Japan's aerospace agency, [JAXA](#), which delivered about 5 grams (0.2 ounces) of material from the [asteroid Ryugu](#) to Earth. OSIRIS-REx managed to bring back about 121 grams (4.3 ounces). Five grams of asteroid bits were enough to yield some exciting results, though, which foreshadows what 121 grams of asteroid bits could lead to. That's especially considering how NASA aims to deep freeze some of those grams so future scientists, perhaps not yet born, can reap the benefits of OSIRIS-REx as well one day, with inevitably better technology and better context.

"The aim was to retrieve 60 grams of material — we got more than double that," Dworkin said. "And this sample exists for further and deeper studies."

Concerning the chemistry being discussed here, it's also true that the organics found on Bennu have been found on other meteorites before. Some of life's 20 amino acids have even been [found in JAXA's samples of Ryugu](#). In fact, on the topic of Ryugu samples, scientists also found ammonia there (albeit not quite the heaping amounts they're seeing in Bennu samples) as well as trace minerals (though different types).

First off, in comparison to meteorites, which enter Earth's atmosphere while enduring a fiery reentry process before plummeting to the ground, the OSIRIS-REx samples are pristine due to the lengths NASA went to to utilize a spacecraft in their delivery. And, when it comes to Ryugu, I suppose it's always great to have double evidence for asteroid organics to begin with.

"The bottom line is we have a higher confidence that the organic material we're seeing in these samples are extraterrestrial and not contamination," Glavin said. "We can trust these results."

At the end of the day, the pristine quality of the Bennu samples — and the Ryugu samples, for that matter — may be why scientists were able to find these exciting space rock molecules at all.



Koenig/The University of Arizona)

A close-up of the OSIRIS-REx sample capsule after it landed in Utah. (Image credit: Mark

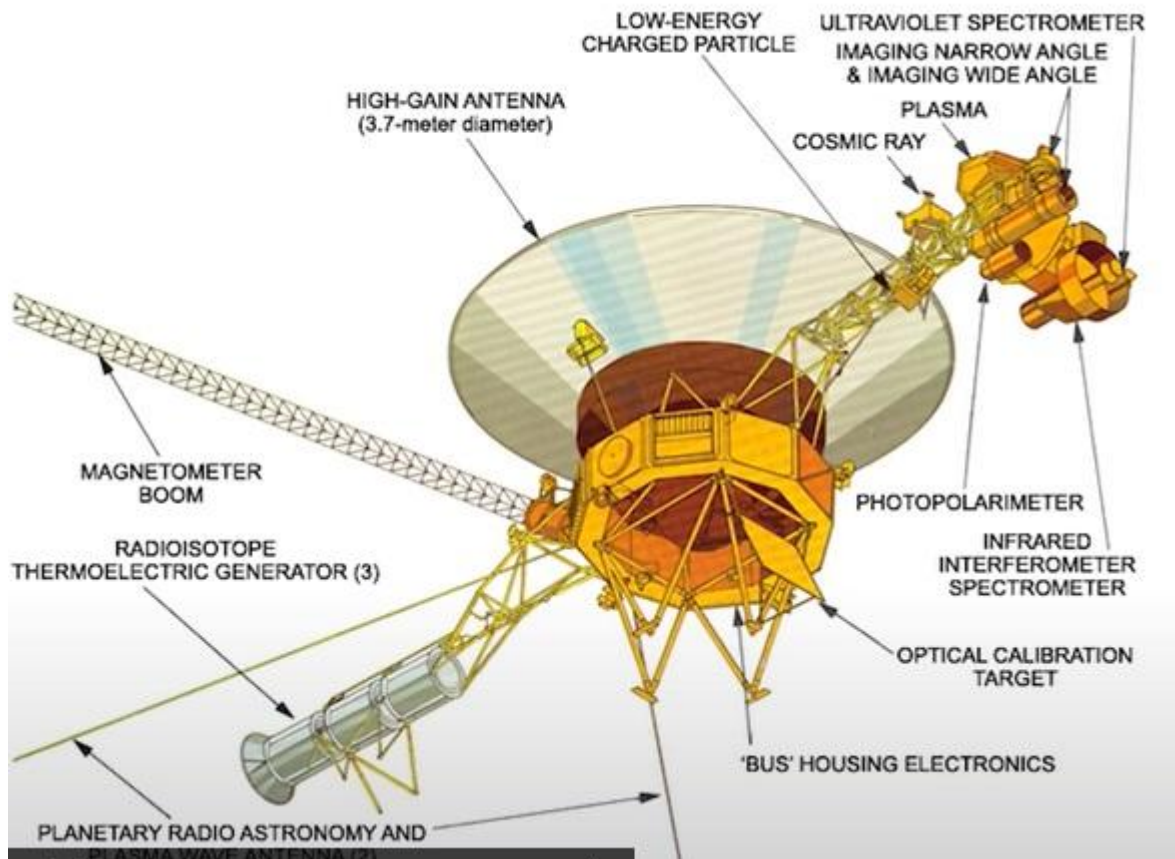
"We've never seen minerals like this in meteorites before, and only recently have our colleagues working on samples from Ryugu, brought back by the Japanese Hayabusa2 mission, documented a different sodium carbonate mineral and magnesium sodium phosphate," Tim McCoy, curator of meteorites at the Smithsonian Natural History Museum in Washington, said. "But even though we've never seen these in meteorites, they're actually reasonably well known from Earth where sodium rich lakes like Searle lake in California and the Mojave, through evaporation, form sodium-rich brine, salt-rich layers."

As those layers evaporate, he said, they become increasingly concentrated in things like sodium and chlorine and fluorine. But, then, why wouldn't they be seen in the meteorites?

Well, seeing as how these minerals form from the evaporation of water, as with those lakes McCoy mentioned, any general contact with water would make them disappear. [Earth's atmosphere](#) has water content galore — and it is that same atmosphere that meteorites travel through when they fall from space. OSIRIS-REx's asteroid samples don't have this issue, as they remained sealed within their spacecraft upon returning to Earth, where they were immediately transferred to a highly controlled containment room.

That wasn't all. To further ensure accuracy, the team even examined residue that may have come from the spacecraft itself that could've altered the samples and data coming from them.

DARC FEBRUARY PROGRAM: You know this editor has had a lot of articles on space vehicles. So, we'll have a **YouTube on Voyager 1 and 2**. I am just amazed how all this communications can happen millions of miles away or more and how the blazes it is done. Morse code is a miracle to me, I have said many times. Hi hi.



These two satellites have been out there for 47 years???

Our January meeting program on the **MAGNETRON!** Duh, I didn't know that technology gave us the microwave!

Amana Radarange Microwave Oven, 1975

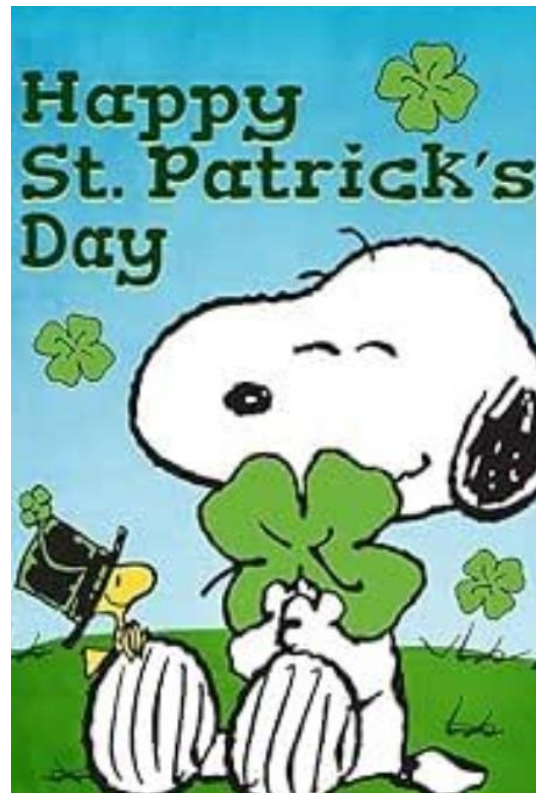
Amana's Radarange, introduced in 1967, was the first compact microwave oven made for home use. By 1975, when Ed and Flo Harper bought this Radarange as a family Christmas gift, sales of microwave ovens outpaced gas ovens for the first time. The convenient, time-saving microwave oven was becoming a practical necessity for a fast-paced world. People had less time to devote to cooking.

What universe have I been living in?



Steve KA1CNF actually brought in a working Magnetron

he took out of a microwave oven where the keypad was broken to show us. Ding Bat -I sure am. Holy crow. TNX, Steve. I am thankful for the DARC meeting programs. I get some tech knowledge my left brain needs to gather info on. Hi hi.



That is it for this month. Remember, ideas, articles, projects or fun operating your rigs are always welcomed by members. please help the editor out. Email me, please.

Have a safe month. Keep Warm.

