

RCA AMATEUR RADIO CLUB

NOVEMBER, 2014

MONTHLY NEWSLETTER

INDIANAPOLIS, IN

THE NEXT MEETING OF THE RCA AMATEUR RADIO CLUB WILL BE

TUESDAY, NOVEMBER 11th, 6:30 PM AT [G.T. SOUTH'S](#),

5711 E. 71st STREET, INDIANAPOLIS, IN

RCA ARC NEWS

SUMMARY OF THE OCTOBER MEETING – The '88 repeater is operating normally. Some matching of the received audio from the three receivers needs to be done to improve the operation of the voter. We have no leads any additional locations for a receive site. K9RU reported on some of the problems Tom Chance is experiencing with the site for the 147.21 repeater which has been located on the 500 ft self supporting tower at Willard Park. EJ, KK9EJ, gave an update on the DMR repeater recently installed in Indy. It was noted that the second meeting of the Northern Indiana Repeater Linking group would be the first of November 1st. This is a group looking into linking repeaters around Indiana. K9RU reported that [Dave Arland](#), former head of public relations at Thomson, will be the guest speaker at the February meeting Indy Radio Club meeting. Dave now runs a consulting firm, Arland Communications and is the Gadget Guy on WIBC radio. Don't forget the Ft. Wayne Hamfest Nov. 15.

NEXT TEST AMATEUR RADIO LICENSE TEST SESSION – November 8, Saturday

Time: 12:00 PM (Walk-ins allowed)

Contact: Ronda Curtis, 317 363-7457, ws9h@arrl.net

Location: Integrated Public Safety Commission, 8468 E 21st St., Indianapolis, IN 46219

HOOSIER DX AND CONTEST CLUB RECEIVES THE IRCC OUTSTANDING CLUB AWARD --



Jim Rinehart, K9RU, Vice Chairman of the IRCC presenting Dave Spoelstra, N9KT, President of the HDXCC, the Outstanding Club Award at the Oct. 8th IRCC Meeting

2014 is the 10th anniversary of the Hoosier DX and Contest Club first Indiana QSO Party, but the effort actually began two years before then. There were two Indiana QSO Parties put on by two different clubs. The HDXCC wanted to combine them into one QSO party and put on well planned and promoted event.

The HDXCC approached both clubs and explained what they wanted to do and they both agreed to let

the HDXCC combine them into one event and become the sponsor of the INQP.

The club still had a lot of work ahead of it working out the rules and getting the logging software providers to include the INQP in their programs. Promoting was one of the biggest efforts and that required going to club meetings around the state, making presentations with the goal of trying to get at least one station on from every county. Another a big effort was getting as many rovers on as possible to be sure all counties were covered.

The first year only about 20 logs were turned in. Ten years later over 200 logs were turned in and it is a year round club project and as they complete the log checking and awards presentations. [The highest scoring "Rover" in the 2014 INQP was KK9EJ. Congratulations EJ!]

The HDXCC also created the Worked All Indiana County Award to supplement the INQP.

The IRCC wanted to recognize the hard work the HDXCC has done in building the INQP into a major Indiana operating event. – IRCC Newsletter

THE INDIANA AOY AWARD WILL BE PRESENTED AT THE FORT WAYNE HAMFEST -- The "IRCC (Indiana Radio Club Council) Indiana Amateur of the Year" award presentation will be made at the Fort Wayne Hamfest. This year we have two nominees for the AOY:

Gary Adams, W9EEU Wabash Valley Amateur Radio Association (WVARA)

Ron Burke, KB9DJA Hendricks County Amateur Radio Society (HCARS)

The IRCC forum, including the AOY award is scheduled for 11:00 to 11:45 AM Saturday in the Blue Room. Check the Forum schedule at the Hamfest for last minute schedule changes. Stop by the IRCC booth and check out what the IRCC is doing.

HAMFESTS, OPERATING EVENTS, VOLUNTEER OPPORTUNITIES

Nov 1-3

ARRL CW SS <http://www.arrl.org/sweepstakes>

Nov 15

Ft. Wayne Hamfest & Computer Expo, <http://www.fortwaynehamfest.com/>

All dates, unless otherwise stated, are UTC.

<http://www.arrl.org/contest-update-issues> Contests updates

<http://www.hornucopia.com/contestcal/> WA7BNM Contest Calendar

<http://www.arrl.org/special-event-stations> ARRL Special Event Stations page

http://www.arrl.org/exam_sessions/search ARRL training page for test sessions

<http://indyhams.org/events/> Indiana events and public service opportunities.

SATELLITES CARRYING AMATEUR RADIO PAYLOADS AMONG THOSE LOST IN LAUNCH EXPLOSION

The [RACE](#) and [GOMX-2](#) CubeSats, both carrying Amateur Radio payloads, were among more than 2 dozen satellites lost after an unmanned Orbital Space Sciences ([OSC](#)) Antares 130 vehicle exploded spectacularly shortly after launch at 2222 UTC on Tuesday, October 28, from the Mid-Atlantic Regional Spaceport at Wallops Island on Virginia's Eastern Shore. The Antares is a new medium-class launch vehicle developed by OSC. The rocket exploded about 6 seconds after launch, sending a huge ball of fire hurtling toward the ground and igniting a massive fire at the NASA launch site.

"While NASA is disappointed that Orbital Sciences' third contracted resupply mission to the International Space Station was not successful today, we will continue to move forward toward the next attempt once we fully understand today's mishap," said William Gerstenmaier, Associate Administrator of NASA's Human Exploration and Operations Directorate. "The crew of the International Space Station is in no danger of running out of food or other critical supplies." Indeed, a smaller resupply

mission, launched from Russia, reached the ISS the next day.

The Radiometer Atmospheric Cubesat Experiment (RACE) CubeSat was a joint project of The Texas Spacecraft Laboratory ([TSL](#)) at the University of Texas-Austin and NASA's Jet Propulsion Laboratory (JPL). Built by a 30-student team, it carried a 183 GHz radiometer, a new science instrument designed by JPL. The spacecraft was equipped to transmit using GMSK at 38.4 k and CW telemetry on a downlink frequency of 437.525MHz.

TSL's Glenn Lightsey, KE5DDG, a UT engineering professor, oversaw the student project that worked hand-in-hand with NASA staff in creating a satellite that aimed to measure water vapor in Earth's atmosphere.

"It's unfortunate, but it is also part of the aerospace industry," Lightsey [told](#) the *Texas Statesman* newspaper. "The nature of building space vehicles is that it is not a 100 percent reliable process. Getting into space is really the hardest part."

The 2U GOMX-2 CubeSat was intended to test a de-orbit system designed by Aalborg University in Denmark. Karl Klaus Laursen, OZ2KK, is listed as the "responsible operator" on International Amateur Radio Union frequency coordination documents. The Amateur Radio payload proposed using a 9.6 k MSK data downlink on 437.250 MHz. Also on board was an optical communications experiment from the National University of Singapore. The mission also aimed to flight qualify a new high-speed UHF transceiver and SDR receiver built by an Aalborg University team.

The Antares 130 resupply mission was carrying some 5000 pounds of cargo to the International Space Station. The Antares 130 also was carrying the Flock-1d array of 26 satellites as well as Arkyd-3 and Cygnus CRS-3. RACE, GOMX-2, and the other satellites were to be launched into orbit from the ISS later. --ARRL Letter

ARISS ENCOURAGES SCHOOLS TO APPLY NOW FOR SPACE STATION HAM RADIO CONTACT OPPORTUNITIES

The Amateur Radio on the International Space Station ([ARISS](#)) program has [announced](#) that the [application](#) window is open for proposals from formal and informal educational institutions and organizations to host an Amateur Radio contact with an ISS crew member. The deadline to submit proposals is December 15. Educational entities may apply individually or in concert with other institutions or organizations. ARISS anticipates that ham radio contacts with the space station will take place between May 1 and December 31, 2015.

"Crew scheduling and ISS orbits will determine the exact contact dates," the ARISS announcement explained. "To maximize these radio contact opportunities, ARISS is looking for organizations that will draw large numbers of participants and integrate the contact into a well-developed education plan." Since December 2000, crew members aboard the International Space Station have taken part in scheduled Amateur Radio contacts with students on Earth. Contacts typically last about 10 minutes -- depending upon the ISS orbit -- and follow a question-and-answer format. Schools and educational organizations are encouraged to partner with a local Amateur Radio club or group to handle the technical aspects of the contact.

An ARISS contact is a voice-only communication opportunity via Amateur Radio between astronauts and cosmonauts aboard the space station and classrooms and communities. ARISS contacts afford education audiences the opportunity to learn firsthand from astronauts what it is like to live and work in space and to learn about space research conducted on the ISS. Students also will have an opportunity to learn about "satellite communication, wireless technology, and radio science."

The ARRL website has [more information](#) about the program, including [details](#) on expectations, audience, proposal guidelines and application form, and dates and times of informational sessions. [Contact](#) ARISS with any questions or for additional information.

ARISS is a cooperative educational initiative of the ARRL and AMSAT, in partnership with NASA and other international space agencies. --ARRL Letter

4M MOON ORBITER COMPLETES LUNAR FLYBY

The recently launched 4M (Manfred Memorial Moon Mission) Amateur Radio payload completed its loop around the moon on October 28 between 0030 and 0215 UTC. Among the 13-character onboard messages posted prior to launch was a encomium for Manfred Fuchs, to whom LUXspace dedicated the mission. Fuchs was the founder of LUXspace parent OHB. Roland Zurmely, PY4ZBZ, the first station to receive the 4M signal, was also the first to piece together the 158 JT65B 13-character messages comprising dedication, which described Fuchs as playing "an outstanding role in the European space industry over the last decades." Fuchs died earlier this year at the age of 75.

The 4M payload downlink is on 2 meters (145.980 \pm Doppler shift), transmitting continuously at a power of 1.5 W into a quarter-wave monopole. For its first 12 hours, the 4M payload was powered by rechargeable batteries. It then switched automatically to non-rechargeable high-energy density cells. Even as the spacecraft is on its return trajectory, receiving the signal requires a high-gain antenna. Stations in the Southern Hemisphere have the best chance of hearing the 4M payload. Radio amateurs have been encouraged to [receive and report](#) the spacecraft's signals. As of October 29, the spacecraft was some 255,000 miles from Earth. A 4M [tracking calculator](#) and payload [blog](#) also are available.

A Chinese Long March 3C/G2 rocket [carried](#) the 4M [lunar flyby experiment](#) into space at 1759 UTC on October 23 as a private payload on China's Chang'e-5-T1 mission. Chang'e-5-T1 represents the third phase of China's lunar exploration program, aimed at validating technologies for a future lunar sample return probe. If successful, this mission would mark the first successful re-entry of a Chinese space vehicle into Earth's atmosphere.

"Here at LUXspace, we are really thankful and grateful to all in the radio amateur community who definitely [are] major actor[s] in the success of this mission," Ghislain Ruy, LX2RG, of LUXspace, said this week. -- *Thanks to AMSAT-UK via AMSAT News Service*

KP1-5 PROJECT GETS PERMISSION TO ACTIVATE NAVASSA ISLAND (KP1) IN JANUARY 2015

[The KP1-5 Project](#) has received word from the US Fish & Wildlife Service (USFWS) that it may [activate](#) Navassa Island (KP1) in January 2015. The DXpedition, using the call sign K1N, will be a maximum of 14 days, and exact dates will be determined by USFWS mission requirements and weather windows.

"Our experienced team of 15 is complete and is ready for the challenge," said an October 22 KP1-5 Project news release from President Bob Allphin, K4UEE, and Vice President Glenn Johnson, W0GJ. "The weeks ahead will be extremely busy as the team has less than 90 days before the DXpedition comes on the air."

As the announcement explained, January is the month of minimum bird nesting activity, and the USFWS had asked that the operation be completed during that month. Weather is unpredictable in January, however, and because Navassa is surrounded by cliffs, a safe landing by boat would be difficult or impossible.

"For safety reasons and in order to maximize our time on the island and on the air, a helicopter operation is planned," the team's news release said. "Navassa is over 100 miles (160 km) from the nearest helicopter staging point, and as many as 10 round trips will be required at the beginning and end of the operation. Obviously, this means that there will be a significant cost for activating this No 1 ranked DXCC entity."

The KP1-5 Project said it will be working with USFWS over the next few weeks to firm up details. The KP1-5 Project team has committed to fund 50 percent of the DXpedition's tab. "We are hopeful the DX community at large will fund the remainder," The announcement concluded.

[INDEXA](#) has announced that it will provide substantial financial support for the Navassa Island KP1-5 Project DXpedition. More than half of the DXpedition team members are INDEXA officers, directors, and members.

In other pending-DXpedition news, landing permission has been granted by the Norwegian Polar Institute for a [DXpedition on Bouvet](#) (3Y/B). Landing permission covers the period from mid-January to mid-April 2016. --ARRL Letter

YOUNG HAM RECOGNIZED FOR NAVIGATION AID FOR VISUALLY IMPAIRED

A young radio amateur from California is one of nine *Popular Mechanics* "Future Breakthrough Award" winners. Shiloh Curtis, KK6ISM, developed a "hat-based, hands-free, haptic navigational aid for visually impaired individuals." As the publication [explained](#), after a friend from her school's robotics club described going blind as losing "two eyes and one hand," Curtis determined to come up with a way to free up the hand that would be wielding the classic white cane. Robotics was the key.

"A robot is blind until you put sensors on it," she told *Popular Mechanics*. "Why don't we put sensors on the blind, so they can navigate like robots?"

She combined a wide-brimmed hat, vibrating motors, and a robot vacuum cleaner's laser distance sensor to come up with the wearable device that warns the wearer of obstacles through vibrations.

Shiloh Curtis is a junior at Laughing Thunder Academy in Sunnyvale, California. She has been recognized as the winner of California State Fair "Project of the Year" and was an Americas Regional finalist in the Google Science Fair. She is the daughter of Dave Curtis, N6NZ. -- ARRL Letter

NOW ANOTHER MAJOR VACUUM TUBE PRODUCT SEEMS POISED TO FADE AWAY

Vacuum tubes disappeared from electronic products years ago. Yet there have been some lingering vacuum tube-based products in production. The last major vacuum tube retirement was the long-lasting cathode ray tube (CRT). In the late 1990s and early 2000s, the CRT finally gave way to the LCD/LED and other flat panel displays in video monitors and TV sets. Now another major vacuum tube product seems poised to fade away: The microwave oven.

The main component in a microwave oven is a magnetron, a high power microwave vacuum tube oscillator. It operates at 2.45 GHz. It radiates the food heating and cooking it. The magnetron was invented during World War II for radar. Magnetrons can easily generate thousands of watts of power. Electrons from a filament-heated cathode are attracted by a high voltage anode but a surrounding magnet modifies the electron paths thereby exciting cavity resonators tuned to the desired frequency producing a continuous wave (CW) signal. That signal is coupled to an antenna that directs the energy according to the application.

The magnetron was the component of choice for radar but also RF heating applications. Industrial uses came first but in the 1970s, several companies offered "radar ranges" for consumer cooking. They rapidly became popular because they reduced cooking time and made cooking more convenient. Today virtually every kitchen has a built in microwave as well as a conventional oven. If not, a counter top microwave oven is usually present. It is a must-have consumer appliance that we all take for granted today.

Despite the wide microwave acceptance, they do have their problems. They often cook unevenly and typically lose power over time as the magnetron filament and cathode deteriorate. At last it is possible to replace the magnetron with solid state devices.

Up until now there were few if any transistors that could crank out hundreds and certainly not

thousands of watts or power at microwave frequencies. That has changed in the past years with advances in GaN technology and advanced silicon LDMOS. Today Freescale Semiconductor is offering devices that will let appliance makers produce even better microwave ovens.

The product of interest is Freescale's new MHT1003N, a 250 watt LDMOS transistor for 2.45 GHz that provides a power-added efficiency (PAE) of 58%. Another device targeting RF heating applications is the MHT1002N for 915 MHz that can deliver 350 watts at 63% PAE. Using the MHT1003N, manufacturers can use from one to eight of these 250 W units to build a microwave oven with the desired power level. And the magnetron's 4 kV power supply goes away in place of a supply of 28 to 50 volts. Furthermore, the crude on-off control of the magnetron can be replaced with full variable power control. Using multiple antennas, one per amplifier, provides better coverage of the cooking chamber. This allows food to be cooked more precisely while the unit operates more efficiently. And the product lifetime is significantly greater.

Freescale is also offering an RF Power Tool System, a development platform of hardware, software and documentation that gives inexperienced RF appliance developers all the tools to create a product fast and easy. For more details on all this, go to: www.freescale.com/RFheating.

Maybe the magnetron is really not the last vacuum tube product, but close to it. There are still some other microwave tubes around like the klystrons in some satellite ground stations and the traveling wave tubes (TWTs) in satellites. The new GaN transistors will probably replace some TWTs in future satellites but klystrons will be tough to replace.

It will be a while before all the magnetron microwave ovens disappear just as it is taking years for CRT monitors and TV sets to fade away. But you can look forward to the future where your popcorn will be more precisely popped in a solid state oven. – Lou Frenzel, Electronic Design

HAM RADIO DMR CELEBRATES ITS 10,000th USER ID

On October 29th, ham radio DMR reached an important milestone by adding its 10,000th user ID, making it one of the fastest growing digital modes within the ham radio community.

[DMR, which is short for Digital Mobile Radio](#), is a published standard for digital voice communications by the [European Telecommunications Standards Institute \(ETSI\)](#), which allows radio equipment manufacturers to build digital radios that are interoperable with one another. By having many manufacturers build radios that support DMR, hams can purchase relatively inexpensive digital radios that can communicate with one another, unlike other digital radios that use proprietary formats. For this reason, adoption of DMR has experienced tremendous growth by hams all over the world since its inception. With over 800 ham radio DMR repeaters in 33 countries, 22 of which are represented as part of the DMR-MARC network, hams using DMR radios can talk to each other globally with absolute crystal clarity using the power of the Internet. <http://www.va3xpr.net/category/clubs/dmr-marc/>

"I never expected that DMR would grow so quickly within the ham radio community." said [Mike Swiatkowski, AA9VI](#), one of the lead administrators for the [DMR-MARC network](#) – the largest ham DMR repeater network in the world. "Digital voice modes, such as DMR are changing the face of ham radio and helping it to stay relevant with our Internet-based digitally connected society" added Mike. Mike noted that the first ham DMR repeater was launched in 2009 and the numbers of users has more than doubled every year since then.

The lucky ham to receive the 10,000th user ID was [Blane Wilson, K3LYE](#) of Jacksonville, FL., an Extra class licensee who has been an avid HF operator since he first got licensed in the 1960's. "My impression from just hearing the clarity and function of the system and its specific groupings where you can select who you talk to was very impressive, compared to some of the noise and lack of clarity on the traditional UHF/VHF bands." said Blane, who was introduced to DMR the night before during presentation at his local ham radio club meeting.

AMERICAN LEGION ON-AIR TRIBUTE TO VETERANS

The American Legion Amateur Radio Club (TALARC) will operate Special Event Station W9L on Veterans Day, Tuesday, Nov. 11 from 0900 to 1600 EST from The American Legion's National HQS in

Indianapolis. An attractive full color commemorative certificate will be available with an SASE.

"Veterans Day is more than just a holiday," said Marty Justis, W9WMJ – president of TALARC. "It is a time for all Americans to recognize the honorable nature of military service and the men and women who have sacrificed so much in defending our nation through the years.

"This special event operation serves to underscore the importance of Veterans Day via the amateur radio community, to salute the men and women who have served our country honorably in uniform, and to recognize the contributions of so many military personnel who served as radio technicians, engineers and members of MARS (Military Affiliate Radio System), passing messages from war zones, at sea and other overseas locations to loved ones back home."

Frequencies will be 14.275 MHz USB +/- 5 KHz, IRLP Node 4816, and in Central Indiana 146.46 MHz simplex or the 145.17 MHz repeater in Hamilton County. After working W9L, send a 9X12 inch self-addressed-stamped-envelope to The American Legion Amateur Radio Club, 700 N. Pennsylvania St., Indianapolis, IN 46204.

With a short report, SWL certificates will be issued also. --IN ARRL

SHORTS

THE ARRL FOUNDATION IS CURRENTLY ACCEPTING APPLICATIONS FROM ELIGIBLE RADIO AMATEURS PURSUING HIGHER EDUCATION -- More than 80 scholarships ranging from \$500 to \$5,000 will be awarded in 2015.

THE INDIANAPOLIS AMATEUR RADIO ASSOCIATION, operator of the **Indianapolis Hamfest**, sponsors a \$1000 scholarship awarded to a licensed amateur pursuing a course of study in Electrical or Electronics Engineering, Computer Science, or related fields. Preference is given to applicants living in Indiana or the ARRL Central Division. The 2014 scholarship was awarded to James R. Lithgow, KC9LXT of Schaumburg, IL.

Applications must be received by **11:59PM Eastern Standard Time January 31, 2015. Transcripts must be received by February 13, 2015.**

THE MARION COUNTY ARES TEAM WILL BE CONDUCTING A SIMULATED EMERGENCY TEST OR SET ON SATURDAY, NOVEMBER 8TH. The SET will be run in conjunction with the Indiana Section ARES SET which will involve ARES teams state wide. The exact start time has not been shared and is a design of the exercise. The exercise is scheduled to run for 4 hours so please plan accordingly.

The local response by the Marion County ARES Team will begin with a Resource Net on the 147.120+ repeater. The Net Control Station on the Resource Net will have additional information regarding the exercise scenario and assignments. A telephone recall of registered Marion County ARES volunteers may be initiated as additional manpower is needed.

The mechanics of the Indiana ARES Simulated Emergency Test have been shared with the counties participating. You can read about the exercise overview and the mechanics by clicking the link below. [2014 IN ARES SET Info](#)

INDONESIA'S NEW NATIONAL LEADERS ARE BOTH AMATEUR RADIO LICENSEES – President Joko "Jokowi" Widodo, YD2JKW, holds a General class license. Vice President Jusuf Kalla, YC8HYK, is an Advanced class licensee.

Elected in July, Jokowi, 53, and Kalla, 72, were inaugurated on October 20 in Jakarta. Indonesia is the world's third-largest democracy, with a population of approximately 250 million. Secretary of State John Kerry represented the US at the inauguration and met with the new president afterward. --ARRL Letter

MIRAGE, KLM CO-FOUNDER KENNETH E. HOLLADAY, K6HCP, SK – The co-founder of Mirage Communications and KLM, Ken Holladay, K6HCP, of Gilroy, California, died October 14 after an

extended illness. He was 75. Holladay and Everett Gracey, WA6CBA (SK) co-founded Mirage Communications, now a part of MFJ. He was also the "K" in KLM Electronics, Inc, which he co-founded with Leeland "Mel" Farrer, K6KBE, and Mike Staal, K6MYC.

A radio amateur from his high school days and an ARRL Life Member, Holladay was a California native and attended San Jose Junior College. He wrote several articles in the 1960s and 1970s for *Ham Radio* magazine and for *QST*. He and his wife Jacqui published *Electro Buyers Guide*. He was an active builder and experimenter on the VHF and UHF bands and was an early participant in EME activity on 50 MHz and 1296 MHz. Read [more](#). --ARRL Letter

RALPH FEDOR KØIR HAS POSTED A VERY INTERESTING VIDEO TO YOUTUBE THAT INTRODUCES NEWCOMERS TO DXING, DXPEDITIONS, AND AMATEUR RADIO IN GENERAL. See Gary K9SG on far left in photo of 3 guys on Peter 1. <http://www.youtube.com/watch?v=k4dJcK-WVRw&authuser=0>

AN INTERESTING [WEBSITE](#) FOR SEARCHING OLD RADIO MAGAZINES with two million pages for your browsing pleasure!

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