

SQUAKBOX

Issaquah Amateur Radio Club

Volume 41, No. 4

Issaquah, Washington

April 2019

Survey: FT8 Growing as DX Mode in an Era of Waning Propagation

In his 2018 update of his survey of modes used on the air, Club Log's Michael Wells, G7VJR, says the number of Club Log users uploading at least one FT8 contact to



the site grew from 8,000 in 2017 to 14,200 in 2018. Wells worked

with data from Club Log users who, he reports, uploaded 41.3 million contacts in 2018, up by 12% from last year.

"I think that fact is more significant given the ongoing decline of this particular solar cycle, and it's possible evidence of extra activity from FT8 and newly active amateurs who'd run out of steam on CW and SSB, but are back to try digital modes," Wells said.

He reports that 13,900 users uploaded at least one CW contact, and 18,000 had at least one phone contact. The total number of active users was just under 22,000 across

all modes in 2018, Wells said, who added that number has been dropping each year since 2015.

"When we look at the graph of QSOs, you can deduce that FT8 users must be prolific in terms of the number of QSOs they make when they're on the air," Wells said. "Once you start making FT8 QSOs, I get the feeling it's more likely you'll be on the bands for longer in a session, as it can be quite addictive working DX in the noise. Having those absolute signal-to-noise figures is compelling." – ARRL Letter, 3/21/2019 - S

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March Program

Mystery Program

Unfortunately we do not know what the program will be at this time. Check our WEB for copy of the latest info.

Future programs are as follows:
May - Coast-to-coast - Barry K7BWH
June - Field Day Prep

Contact Joe KF7BMD 425-985-1562 to volunteer.

General Class Element 3 Question Pool Errata Have Been Released

The NCVEC Question Pool Committee has released the latest errata for the 2019 - 2023 General Element 3 question pool, which goes into effect on July 1, 2019. These changes are reflected in the

(Continued on page 3)

At the last meeting . . .

March 6, 2019

Lara called the meeting to order at 7:03pm.

Previous minutes

Moved and Seconded, Craig & John, to approve the minutes from January. Approved unanimously.

2) Field Day

Rod is looking at schools. We actually have three options

1. Valley Camp (same as last year)
2. Work with ICAST
3. Private property on Lake Sammamish (just north of boat launch)

Bruce had some concerns with item #2, not repeated.

Dates: June 22-23, set up on Friday.

Several people volunteered to help out. We invite members to contact Lara and/or Joe.

Questions: when can we access the site?

There is a question as to whether we can consider this a publically available site.

Valley Camp is not.

3) Club Rosters

Bruce was discussing the current roster and policy. We do NOT publish our roster on the club website. Other organizations, like Mike&Key, can access membership via the ARRL or the FCC licensee websites.

We agreed to send out our membership form to people on our existing

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E-Mail Elmer

Got a HAM radio question and can't find an Elmer to talk to? Just send your question by E-Mail to our E-Mail Elmer at:

Elmer@w7bi.com - Ed. - S

2019 IARC Officers

President

Lara Flores (WA7LNF) - (Issaquah)

Vice President

Joe Decuir (KF7BMD) - (425) 985-1562 (Issaquah)

Secretary

Mihai Manolache (W4MHI) - (425) 647-7030 (Issaquah)

Treasurer

Don Stewart (KI7TTX) - (206) 450-1222 (Issaquah)

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Rod Johnson (WE7X) - (425) 392-8497 (Issaquah)

How to Clean Up after a Battery Leak

Many hams have had the unfortunate experience of old batteries leaking in a piece of gear or a flashlight, creating a mess. Business technology news site ZDNet recently offered its procedure for cleaning it up. The brief online presentation recommends taking some precautions about coming in contact with the white discharge -- specifically potassium hydroxide in the case of alkaline cells, a caustic irritant. An old toothbrush or something similar can start the project, along with a small scraper, and cotton swabs dipped in water. Start by removing and properly disposing of the bad cells and then brushing out the worst of the material -- preferably outdoors or over a container to catch the remnants.



The article advises against using any sort of acid such as vinegar or lemon juice, lest it cause corrosion problems of its own. It suggests a fiberglass scratch brush for scrubbing the battery compartment contacts clean, although other tools may work as well. Deoxit D5 or

(Continued on page 3)

FCC Adopts New Rules for Spectrum above 95 GHz

The FCC has adopted new rules to encourage development of new communication technologies and expedite the deployment of new services above 95 GHz. The action was the latest move in the Commission's "Spectrum Horizons" branded initiative.

"This spectrum has long been considered the outermost horizon of the usable spectrum range, but rapid advancements in radio technology have made these bands especially ripe for new development," the FCC said in announcing the March 15 move.

Prior to its "historic" decision last week, the FCC had no rules for authorizing communication above 95 GHz other than by radio amateurs or through experimental operations. Under current rules, specific Amateur Radio allocations exist at 122.25 - 123.00 GHz; 134 - 141 GHz; 241 - 250 GHz, and at frequencies above 300 GHz, and limited experimentation has taken place in this region of the radio spectrum.

Among radio amateurs active in that region of the spectrum is Brian Justin, WA1ZMS, in Virginia -- who has made at least one contact on every available Amateur Radio band. He earned the first-ever ARRL VUCC awards for 122 GHz, 134 GHz, and 241 GHz, and even went so far as to make the first contact on a less-than-1-millimeter band, 322 GHz.

In announcing adoption of the new rules for spectrum above 95 GHz, the FCC cited "substantial

opportunities for innovation on these frequencies, especially for data-intensive high-bandwidth applications as well as imaging and sensing operations."

The new rules create a new "Spectrum Horizons" experimental license for using frequencies between 95 GHz and 3 THz. "These licenses will give innovators the flexibility to conduct experiments lasting up to 10 years, and to more easily market equipment during the experimental period," the FCC said. The FCC action also makes a total of 21.2 GHz of spectrum available for use by unlicensed devices.

At the invitation of FCC Chairman Ajit Pai, well-known academic researcher, entrepreneur, contesteer, and DXer Theodore "Ted" Rappaport, N9NB, delivered remarks prior to the Spectrum Horizons vote. – ARRL Letter, 03/21/2019 – S

Leak Cont.

similar contact cleaner also comes in handy, with a tiny dab of dielectric grease or silicone paste as a finishing touch to inhibit future corrosion if a leak occurs. Other tips to head off problems down the road include using only name-brand batteries, avoiding mixing old and new batteries, removing batteries from devices not in use, avoiding exposing batteries to extreme heat or cold, and minding battery expiration dates. – ARRL Letter, 3/14/2019 - S

3Y0I DXpedition Team Has Departed for Bouvet Island

The 3Y0I Bouvet Island DXpedition website has announced that the team of operators -- led by Polish DXpeditioner Dom Grzyb, 3Z9DX -- set sail on March 19 from Cape Town, South Africa, for the remote Antarctic island onboard the MV Atlantic Tuna.



"The 3Y0I Bouvet Island Expedition has officially begun," the announcement said. "If everything goes well, we should reach Bouvet in 7 days, around March 26. Landing on the island will be strictly dependent on weather conditions met upon arrival."

According to the website, 3Y0I could be on the air by the end of March, but the team notes that the information is subject to change due to the vagaries of sea and weather conditions. "The team plans to stay at the island at least

(Continued on page 4)

Question Pool Cont.

new General Pool download file, dated March 15, 2019. – ARRL Letter, 3/21/2019 - S

Minutes Cont.

mailing list.

Someone suggested adding goals and objectives for amateur radio.

Bruce suggested that an exchange of needs and skills would be a great meeting topic.

4) Treasurer's Report, was presented via Rod WE7X.

There were two membership deposits, one insurance payment.

5) Introductions

Two people are attending their first meeting.

6) HamFest on Saturday March 9th.

Rod reported.

We will have 4 tables. Rob

bought 2; 2 others for the club.

Rob and Mihai will support it, meeting there.

They should be on the ground floor, in the back.

Moved and Seconded by Bob & Bruce, to buy the other table, for \$85. Passed unanimously.

Lara will help. She and Mihai should get helper passes.

Rod is in "good shape".

7) Mihai cannot attend the May meeting.

He wishes to swap dates with

Barry Hansen. Joe (VP) will approach Barry.

(Since meeting: Barry agrees. Mihai in April, Barry in May.)

8) Western Washington Amateur Radio training reorganization

Dan Stevens leads HAM training in Western Washington. He and his team, including Robert, had decided to change their affiliation from ARRL to an organization called Laurel.

This applies to the planned HAM classes for the first two Saturdays in May and the first two Saturdays in December.

Laurel policy is that there is no charge for licensees. ARRL specifies \$15, most of which goes to ARRL; some goes to support the local testing team.

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FCC Reaches \$900,000 Settlement in Unauthorized Satellite Launch

The FCC has settled an investigation into an alleged unauthorized launch and operation of small satellites by Swarm Technologies. The company agreed to a Consent Decree that included a \$900,000 penalty, an extended period of FCC oversight, and a requirement of pre-launch notices to the FCC, among other stipulations.

"We will aggressively enforce the FCC's requirements that companies seek FCC authorization prior to deploying and operating communications satellites and earth stations," FCC Enforcement Bureau Chief Rosemary Harold said. "These important obligations protect other operators against radio interference and collisions, making space a safer place to operate."

(Continued on page 5)

DXpedition Cont.

for 2 weeks, with an option to extend the stay to 3 - 4 weeks, if weather and other factors permit," the announcement said. "We will sign as E51DOM/mm on the way to and back from the island."

The DXpedition has enlisted the assistance of noted DXers Martti Laine, OH2BH; Wayne Mills, N7NG, and Yasu Inoue, JR1AIB, to serve as "ambassadors" for the DXpedition, sponsored by the Rebel DX Group.

"This is a historical undertaking under very severe conditions with



no DX Foundation support nor involvement," their announcement said. "One of their objectives is for bringing the cost down to an affordable level for more people."

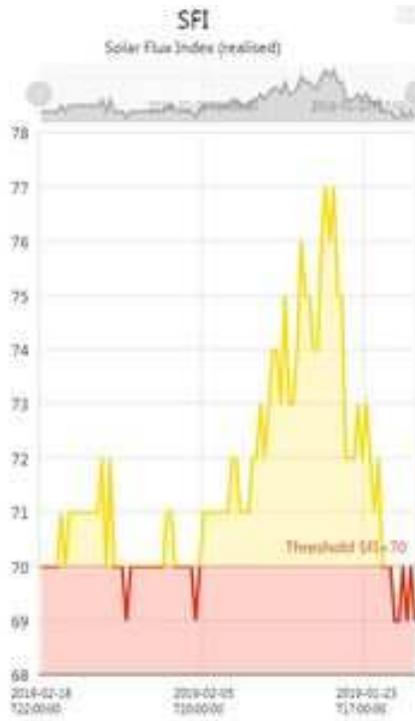
Unlike the unsuccessful 3Y0Z DXpedition, which reached Bouvet Island but was unable to land because of sea conditions and a mechanical problem with the vessel, the 3Y0I operators plan to land using Zodiac inflatable vessels. 3Y0I will attempt to produce a workable signal on 160 and 80 meters in the challenging Bouvet Island environment. The high-volume bands are expected to be 20, 30, and 40 meters. – ARRL Letter, 3/21/2019 - S

Build Your Own Space Weather Dashboard Settlement Cont.

NOAA's Space Weather Prediction Center (SWPC) has started adding a variety of space weather data in the open-standard JavaScript Object Notation (JSON) format, and the SWPC site provides a root directory for format data. Digital visualization library amCharts specializes in JavaScript charts and maps for dynamic data display.

A free amCharts license is available in exchange for including a product mention. Jan van den Berg, PA2P, suggests combining NOAA's data with amCharts. Other providers of free charts include Google Charts and Chart.js.

Van den Berg offers more information and examples on his website. Contact him for additional information.- ARRL Letter, 3/14/2019 - S



In April 2017, Swarm applied for an Experimental license to deploy and operate two Earth stations and four tiny 0.25 U CubeSats called SpaceBEEs. The FCC denied Swarm's application in December 2017 over concerns about the ability to track the satellites. Swarm nevertheless launched the satellites on January 12, 2018, on a vehicle that also carried an Amateur Radio satellite into space. After reports of the unauthorized SpaceBEEs launch surfaced, the FCC launched an investigation last March.

The FCC determined that Swarm had launched the four SpaceBEEs from India and had unlawfully transmitted signals between Earth stations in Georgia and the satellites for more than a week. In addition, the FCC discovered that Swarm had also performed unauthorized weather balloon-to-ground station tests and other unauthorized equipment tests prior to the launch. All these activities required FCC authorization.

The December resolution requires Swarm to pay a penalty of \$900,000 to the US Treasury and to submit pre-launch reports to the FCC for the next 3 years. The FCC said Swarm has committed to a strict compliance plan to prevent future FCC rule violations.

The FCC issued an Enforcement Advisory last April to remind satellite operators that they must obtain FCC authorization for space station and Earth station operations. The advisory cautioned sat-

Minutes Cont

The new system also is more efficient in some ways. Example: a student takes and passes a test on a Saturday. They can have their license in hand on the following Monday, not waiting weeks.

Result: the training team will ask the clubs for financial sponsorship.

They don't have a budget yet.

They are approaching several local clubs that sponsor HAM training, including IARC.

Roberts' estimate is \$400-500/year.

Bruce ask the question: What is

the benefit for the club? (these minutes do not capture all the discussion.)

Craig asked to research which other clubs support HAM training.

9) MicroHam Digital Conference

Lara received email from Lynn Burlingam, N7CFO, advertising the March 23rd Microhams Digital Conference. It is open for registration at <https://www.microhams.com/mhdc/mhdc2019/>

The main meeting adjourned around 8pm.

Joe Decuir, acting secretary - S

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VE7DXW's "RF Seismograph" May Be Real Seismograph

Alex Schwarz, VE7DXW, in British Columbia, Canada, is exploring the possibility that "RF signatures" detected by the RF Seismograph propagation tool could also be indicating earthquakes, and may even be able to predict them shortly before they occur. A real-time HF propagation-monitoring tool developed by Schwarz and the MDSR team, the RF Seismograph shows both band noise and activity or band activity alone on six HF bands. It's a project of the North Shore Amateur Radio Club (NSARC).

opped the RF Seismograph software to look for changes in propagation during the eclipse," Schwarz explained. "After the eclipse, we decided to leave the RF Seismograph running, and we have now collected 4 years of data."

The system uses an omnidirectional multiband antenna to monitor JT-65 frequencies ($\hat{A}\pm 10$ kHz) on 80, 40, 30, 20, 15, and 10 meters. Recorders monitor the background noise and display the result in six color-coded, long-duration

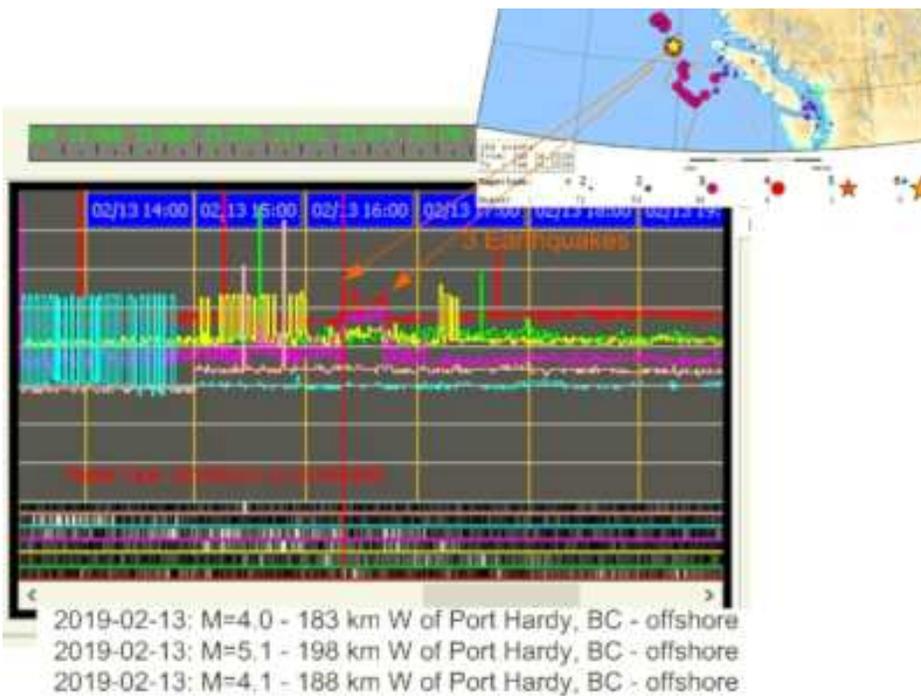
semble a series of vertical bars.

Most recently, the RF Seismograph recorded the magnitude 7.5 earthquake in Ecuador on February 22. Schwarz recounted that noise on 15 meters began to be visible about 1 hour before the quake; then, 2 hours after the quake released, 15 meters started to recover. The US Geological Survey said the quake was about 82 miles below ground. It did not affect 80 meters. Schwarz speculated that the quake was easy to see on the RF Seismograph because 15 meters typically is not open during hours of darkness -- especially when the solar flux is only 70.

Following a magnitude 5.0 earthquake off the coast of Vancouver Island, his RF Seismograph picked up changes. Canada's government-run Earthquakes Canada was able to provide Schwarz with a list of magnitude 6.0 or greater events since the RF Seismograph went into operation, and the two teams have been collaborating to find a correlation between HF propagation anomalies and earthquakes. With the measurements, Schwarz has been attempting find a correlation between the list of past geological events and what his RF Seismograph may have sensed on those occasions.

"The earthquakes show up as RF noise because of the electric field lines, now scientifically confirmed to change the way the ionosphere

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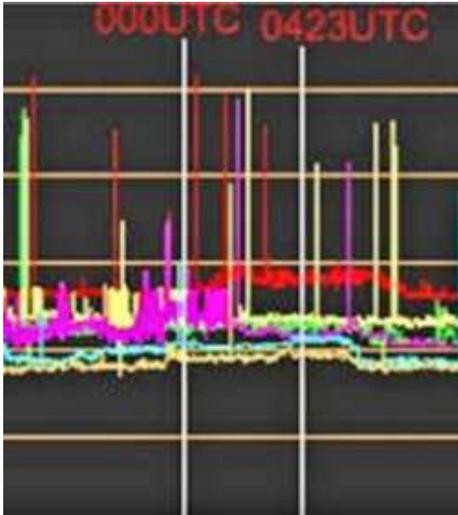
The RF Seismograph indicates an increase in 80-meter noise (red trace) corresponding with an earthquake west of Port Hardy, British Columbia.

"We had been doing the solar eclipse experiment, and we devel-

graphs displaying 6 hours of scans. When signals are present on a band, its graph trace starts to re-

Seismograph Cont.

reflects RF," Schwarz said. He cited an article in the October 2018 edition of Scientific American. (Erik Vance, "Earthquakes in the sky," Scientific American, October 2018, p. 44).

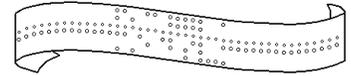


This detail shows the increase in 80-meter noise during the earthquake west of Port Hardy, British Columbia.

Schwarz said 171 earthquakes -- all magnitude 6.0 events or greater -- were studied, and only 15 of them had no RF noise associated with them. In 26 cases, the time of the disturbance detected by the RF Seismograph failed to match the USGS-reported time of the quake. Schwarz said that in 72% of the earthquake studies, the RF Seismograph was able to detect an increase in noise on 80 meters, typically before and after the event.

"More analysis is needed," Schwarz has concluded.- ARRL Letter, 2/28/2019 - S

RYRYRYRY...



DE KA7TTY

Once again it is meeting time. We should be settling in on a location for Field Day this year. We will be finalizing our club roster for this year so be sure to come and make sure your data is correct.

If you are interested in our dinner get-to-gather before the meeting, be sure to check our WEB site at www.w7bi.com for time and location. It is always a good "Eyeball QSO" to catch up with other club members.

All indications are that the Puyallup Hamfaire went well. Did you come home with any new prize possessions? I had to timeshare between the clubs booth and the BEARS table. According to Rod WE7X we did OK with the club stuff and so did he with his personal stuff. The BEARS did too. Even sold some last minute stuff as we were loading the pallets to move out.

Everyone take care. See you at the meeting, John KA7TTY

GPS Network May Experience Errors in "Week Number" Rollback

The GPS network will encounter a small millennium bug of its own in April when the network's "week number" rolls back to zero. This known issue especially could affect those who use GPS to obtain accurate Coordinated Universal Time (i.e., UTC). In the GPS network, the number of the current week is encoded into the message the GPS receives using a 10-bit field. This allows for weeks ranging from zero to 1023. The current period began on August 1, 1999. On April 6, 2019, the week number rolls over to zero and starts counting back up to 1023.

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Bakelite Patented 100 Years Ago

Radio amateurs of a certain age are more familiar than most newcomers with the trade name Bakelite, which derives its name from its inventor Leo Baekeland, who developed Bakelite phenolic resin, the first thermosetting plastic, in 1907. His process patent for making insoluble products of phenol and formaldehyde -- the components of Bakelite -- was filed that year, and Baekeland was awarded a patent a century ago come this December. Bakelite found a place in numerous technologies, including early ham gear and radios, widely employed as an insulating material.

Once a Bakelite product is formed, it will not change shape or melt under heat. In compression

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SQUAKBOX

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The IARC is affiliated with the American Radio Relay League (ARRL). Visit our WEB page at: <http://www.w7bi.com>

Membership is open to anyone regardless of age, sex, race, national origin, religion, or amateur radio license status. Dues are \$15 per year for a family membership, free for those under 19 years of age.

A two-month courtesy mailing of this newsletter will be made to meeting visitors and others upon request.

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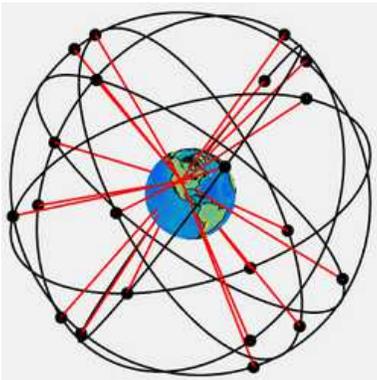
- Coming Events -

- **April 3** - Monthly Issaquah ARC meeting at the Issaquah Senior Citizens Center, 75 NE Creek Way, Issaquah. Doors open at 6:45 PM, the meeting begins promptly at 7:00 PM and the program begins at 8:00 PM. Refreshments are provided.
- **April 13** - Yakima Hamfest. Yakima, Washington <http://yakimaamateurradioclub.com/yakima-hamfest/>
- **April 13 -14** - Communications Academy. South Seattle Community College, Seattle, WA. <http://commacademy.org/>
- **April 22** - Issaquah Communications and Support Team meeting, Issaquah Public Works, Issaquah, talk-in 146.56 MHz at 6:45 PM, Meeting at 7:00 PM.
- **May 1** - Monthly Issaquah ARC meeting. See Apr. 3rd for time and location.
- **May 4** -Electronics, Ham Radio and Experimenters Swap Meet, Kennewick, WA. Contact: Dan Durlinger KD7KJJ, DANCAR68@AOL.COM OR KD7KJJ@ARRL.NET
- **May 5** - Maple Ridge Swap Meet. Pitt Meadows, BC. https://secure.eton.ca/rac/events/detail.php?event_ID=1973
- **May 11** - Stanwood Camano Amateur Radio Club Flea Market and Hamfest, Stanwood Middle School, Stanwood, WA. Contact: Fred Laun, w7pig@arrl.net
- **May 27** - Issaquah Communications and Support Team meeting, Issaquah Public Works,

Settlement Cont.

elite operators and launch companies against proceeding with launch arrangements following a license denial or prior to receiving an FCC authorization. -- FCC Media Release – ARRL Letter, 1/3/2019 - S

GPS Cont.



This should not affect later-model GPS receivers that conform to IS-GPS-200 and provide UTC, but

testing carried out by the US Department for Homeland Security (DHS) raised the possibility that some units may misinterpret the rollover, shifting the date back to January 6, 1980, or possibly to another incorrect date. An affected GPS not only may report the incorrect date, but time accuracy that is critical to precise location data could be compromised. A nanosecond error in GPS time can equate to 1 foot of position (ranging) error. – ARRL Letter, 3/7/2019 - S

Bakelite Cont.

molding, the resin is generally combined with fillers such as wood or asbestos before it's pressed into the ultimate product shape. Tube sockets often were constructed using Bakelite. It later found its way into such products as jewelry. In February 1909, Baekeland officially announced his achievement at a meeting of the New York section of the American Chemical Society. – ARRL Letter, 2/28/2019 - S