Ham Radio in the 21st Century
W4RSC "RADIO SILVER COMET" ARRL SPECIAL SERVICE CLUB

SILVERCOMET SKYWAVE

Silver Comet ARS, INC NEWS PO BOX 1873 Hiram Ga. 30141 501 (C) (3) Not for Profit January 2019 Vol 6 Number 1

The Prez Sez

And as I write this, it is ANOTHER dark, rainy and gloomy night. I think that Cheri and I will have to get out the boat. As there is little to do outside, there are plenty of 'projects' to do indoors. We have had several of our members upgrade their licenses; We have had several upgrade their 'shacks'; And, we have had several of our members start plans for the future (when the sun might return). And... speaking of the future, at our next meeting we will have Mr. Dan Ozment (W4DTO) give a show & tell about portable and remote operations. Please keep in mind that since the first Tuesday fell on January 1st... we have dropped the meeting date back one week and the meeting time will be dropped back to 7:30 PM - this is to accommodate our Silver Comet VE testing session which will be at 6:30 PM until about 7:30 PM. I would like to ask several of our VE's to show up around 6:15 PM

John Reynolds - W4TXA
President - The Silver Comet Amateur Radio Society

In This Issue

W4RSC " Radio Silver Comet "

The Silver Comet ARS Inc. a 501 (c) (3) Not for Profit Organization

Editor's Notes:

Copies of past SKYWAVE newsletters can be found at the club website http://www.silvercometars.com/newsletter.php . Your suggestions and submissions are greatly appreciated. Please email your pictures or articles for publication prior to the 25th of each month. The earlier, the better. If you have not submitted a member biography, please do so.

Chuck K4CGA, Editor

Club Shirts!

Don't forget to order your SCARS logo'd shirts now. Get $$$ for Christmas? Help SCARS grow by displaying the club logo. BothTee's and Polo's are available. See Rick K4ZMW for order forms & help in placing your order.

Monday – "SCARS Night Out" Net!

Please check in if you get a chance and participate in discussions on just about any subject you choose. Check-in begins at 7:30PM. Look forward to hearing from you. It's fun and informative.

73's David Walk – K4BBH

Mark your Calendar!

Jan. 1st – New Years Day
Jan. 8th – SCARS Club Meeting
Jan. 26th – Lawrenceville TechFest

$$$$...Dues-R-Due...$$$

T'is that time again! We are in the New Year and now is the time to pay your 2019 dues. You can pay our treasurer, Dave K4DMF, by check, cash or credit card at the meetings or at breakfast or by Pay-Pal online at www.silvercometars.com

SCARS Christmas Dinner!

The Christmas dinner at O'Charley's in Hiram was a great success and enjoyed by all that attended. Gift cards were won by some attendees in door prize drawings. The food and service was great and we hope to see everyone next year**.**

For more pics visit www.silvercometars.com

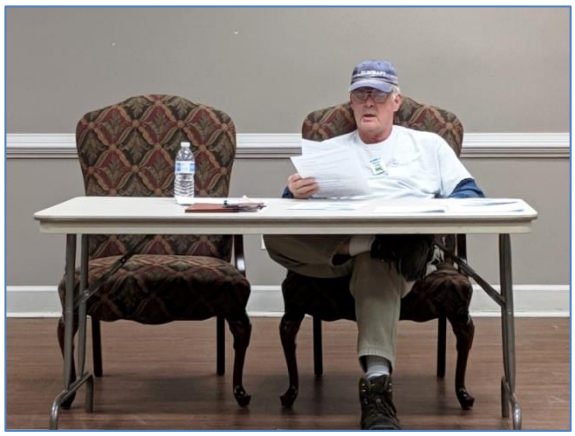
SCARS Community Food Drive!

How can SCARS help? We still need your help. Let's keep up the good work and help fight hunger in our community. Please continue to bring an item or two to our monthly meetings. These items will be delivered in the next couple of days to one or more of the local community food banks for distribution to those in need. Remember, this is voluntary.

December Program - Estate Planning by K4ELI

Our December program was presented by Steve K4ELI and addressed the subject of Estate Planning as applicable to amateur radio operators.

It was a very informative and thought provoking presentation. For several years, Steve has been helping the families of Silent Keys dispose of amateur related equipment including towers, radios, parts and accessories.



January Program – Portable/Go Box by W4DTO!

Dan W4DTO starts off 2019 with an excellent interactive program on GO Boxes and Portable Operation. Several times during the past few years, Dan has posted pictures of his portable operations either camping or on the beach.

Dan has put together a nice collection of equipment and antennas that is already packed, easily taken along and set up. He will provide some hints and tips for others that are interested in getting prepared for camping, hiking , vacationing, or a possible disaster.

If you have GO Box/Bag of equipment already prepared, Dan has invited you to bring it to the presentation to display so other members can get an idea of how they can prepare.

The leadership of the Silver Comet ARS is dedicated to providing informative and useful programs on our meeting nights. Keep an eye on the Skywave newletter, SCARS website www.silvercometars.com and the Groups.IO reflector for upcoming presentations.

Welcome Our New Members!

Please welcome the following new members to the Silvercometars family. If you hear them on the air, please introduce yourself and welcome them to the club.

Marty Grayson …….. KN4KKO

Michael Burgin ……..KM4HB

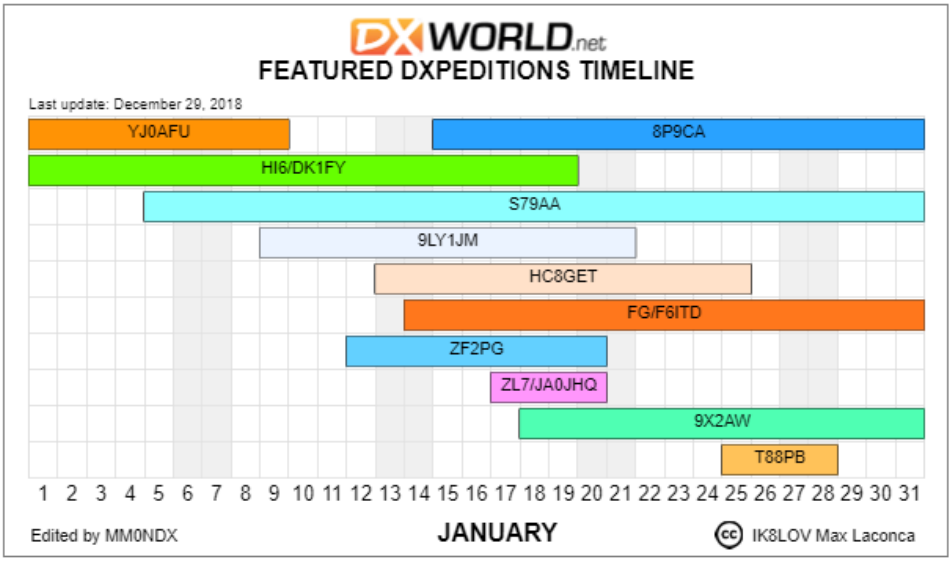
Barry Jones …….. KN4QQD

Digital Update!

Digital mode users need to keep an eye on their software updates. They seem to be changing weekly and some versions do communicate with other versions.

In addition, there are many new software developers joining the digital frenzy and introducing new products and packages.

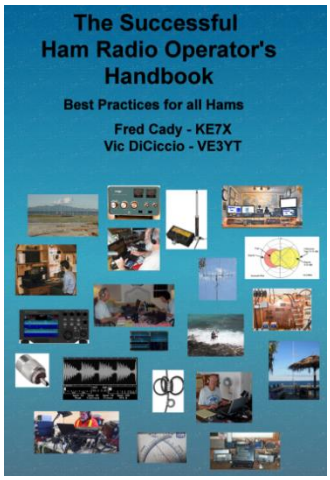
DX World Featured DXPeditions Timeline!



http://www.hamradiotimeline.com/timeline/dxw_timeline_1_1.php

New Books Available

The Successful Ham Radio Operator's Handbook

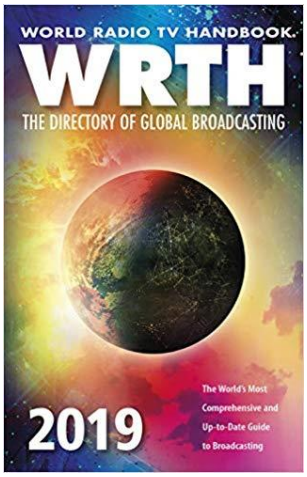


This new book is aimed at new or returning hams, to help them understand the practical aspects of the hobby, how to use their radios, build antennas and baluns, and get on the air successfully. In it you will find explanations of how the various parts of your ham radio - the transmitter and receiver – work, plus how these are being implemented using software defined radio technology. Operating techniques for VHF/UHF repeaters, HF radio DXing techniques, and the new digital modes are covered. Radio propagation, antennas, transmission lines, SWR and the mysteries of baluns are explained. Building your HF station, choosing a radio, connecting your radio to a computer, and mobile and portable operation are extensively covered.

Both the pdf and spiral-bound printed versions are available from Lulu.com, and the print copy is also sold by DX Engineering. You can find them via the links below:

http://www.ke7x.com/successful/ordering-the-successful-ham-radio-operator-s-handbook

World Radio TV Handbook – 2019



The *World Radio TV Handbook* is the world's most accurate and comprehensive directory of global broadcasting. It contains full details by country of radio broadcasts and broadcasters on LW, AM (MW), SW and FM, and details of national TV.

The features section in this **73rd edition** includes articles on *HF Curtain Arrays*, *Broadcasting for Peace* in the Lake Chad region, the new MW transmitter installed by *TWR Bonaire*, and *V7AB Radio Marshall Islands*, as well as its regular *Digital Update*. There are also reviews of the latest equipment including the new Excalibur Sigma SDR from WinRadio, the Airspy HF+ and the handheld Pocket SDR from Reuter Electronik, and other articles, information and maps.

https://store.cq-amateur-radio.com/shop/world-radio-tv-handbook-2019/

Amateur Radio Satellite!

An **amateur radio satellite** is an artificial satellite built and used by amateur radio operators for use in the Amateur-satellite service.[1] These satellites use amateur radio frequency allocations to facilitate communication between amateur radio stations.

Many amateur-satellites receive an **OSCAR** designation, which is an acronym for **Orbiting Satellite Carrying Amateur Radio**. The designation is assigned by AMSAT, an organization which promotes the development and launch of amateur radio satellites. Because of the prevalence of this designation, amateur radio satellites are often referred to as OSCARs.

These satellites can be used for free by licensed amateur radio operators for voice (FM, SSB) and data communications (AX.25, packet radio, APRS). Currently, over 18 fully operational amateur-satellites in orbit [2]act as repeaters, linear transponders or store and forward digital relays.

Throughout the years, amateur-satellites have helped make breakthroughs in the science of satellite communications. A few advancements include the launch of the first satellite voice transponder (OSCAR 3) and the development of highly advanced digital "store-and-forward" messaging transponder techniques.

The information presented regarding functional satellites is outdated quickly as the Amateur Radio Satellite community has become very active in building and being provided educational secondary cargo launch opportunities. For current information please visit AMSAT for North America https://www.amsat.org and AMSAT-UK for Europe https://amsat-uk.org/.

Satellite communications
Currently amateur-satellites support many different types of operation including FM voice, SSB voice, as well as digital communications of AX.25 FSK (Packet radio) and PSK-31.

Mode designators
Uplink and downlink designations use sets of paired letters following the structure **X/Y** where **X** is the uplink band and **Y** is the downlink band. Occasionally, the downlink letter is rendered in lower case (i.e., **X/y**). With a few exceptions, the letters correspond to IEEE's standard for radar frequency letter bands...

Designator	H	A	V	U	L	S	S2	C	X	K	R
Band	15 m	10 m	2 m	70 cm	23 cm	13 cm	9 cm	5 cm	3 cm	1.2 cm	6 mm
Frequency (General)	21 MHz	29 MHz	145 MHz	435 MHz	1.2 GHz	2.4 GHz	3.4 GHz	5 GHz	10 GHz	24 GHz	47 GHz

FM LEOs

A number of low earth orbit (LEO) OSCAR satellites use frequency modulation (FM). These are also commonly referred to as "FM LEOs" or the "FM Birds". Such satellites act as FM amateur radio repeaters that can be communicated through using omni-directional antennas and commonly available amateur radio equipment. Due to the relative ease of tuning FM as compared to SSB and the decreased distance of LEO satellites from earth stations communication can be achieved even with handheld transceivers and using manual doppler correction. The orbit of these satellites however causes the available time in which to communicate to be limited to only a few minutes per pass.

List of FM LEO satellites

Satellite name(s)	OSCAR Designation	Uplink (MHz)	Downlink(MHz)	CTCSS (Hz)	Status
Hope Oscar 68	HO-68	145.825 FM	435.675 FM	67.0	Beacon only
Sumbandila Oscar 67[1]	SO-67	145.875 FM	435.345 FM	N/A	Lost
AMSAT-OSCAR 51[2]	AO-51	145.880 FM	435.150 FM	N/A	Lost
		145.920 FM	435.300 FM	67.0	
		145.880 FM	2401.200 FM	N/A	
		1268.700 FM	435.300 FM	67.0	
		1268.700 FM	2401.200 FM	67.0	
Saudi-OSCAR 50	SO-50	145.850 FM	436.795 FM	67.0 (74.4 to activate)	Active
Saudi-OSCAR 41	SO-41	145.850 FM	436.775 FM	N/A	Lost
SUNSAT-OSCAR 35	SO-35	145.825 FM	436.250 FM	N/A	Lost
		436.291 FM	145.825 FM		
		1265.000 FM	436.2500 FM		
TechSat 1b-OSCAR 32	SO-32	145.850/145.890/145.930 FM 1269.700/1269.800/1269.900 FM	435.225 FM	N/A	Lost
ISS[3]	ARISS	437.800 FM	145.800 FM	N/A	Active
AMRAD-OSCAR 27[4]	AO-27	145.850 FM	436.795 FM	N/A	Interference over USA
AMSAT-OSCAR 16	AO-16	145.920 FM	437.026 DSB-SC[5]	N/A	Lost

List of FM LEO satellites					
Satellite name(s)	**OSCAR Designation**	**Uplink (MHz)**	**Downlink(MHz)**	**CTCSS (Hz)**	**Status**
UoSAT-OSCAR 14	UO-14	145.975 FM	435.070 FM	N/A	Lost
LituanicaSAT-OSCAR 78 [5]	LO-78	145.950 FM	435.1755 FM	67.0	Lost
European-OSCAR 80[6]	EO-80	435.080 FM	145.840 FM	210.7	Beacon only

Note 1: SO-67 suffered a power board failure. The team hoped (2012) recovery to amateur radio operations was possible.

Note 2: As of November 29, 2011 AO-51 has ceased all transmissions.

Note 3: The ISS FM repeater is rarely activated.

Note 4: New bootloader and OS for AO-27 was successfully written and installed by the team. Satellite experiences interference during uplink while above US.

Note 5: The AO-16 downlink transmits in DSB-SC instead of FM, but the satellite otherwise operates like the other FM Birds.

Note 6: EO-80 is currently completing a science mission and the FM transponder will be activated upon completion of that mission.

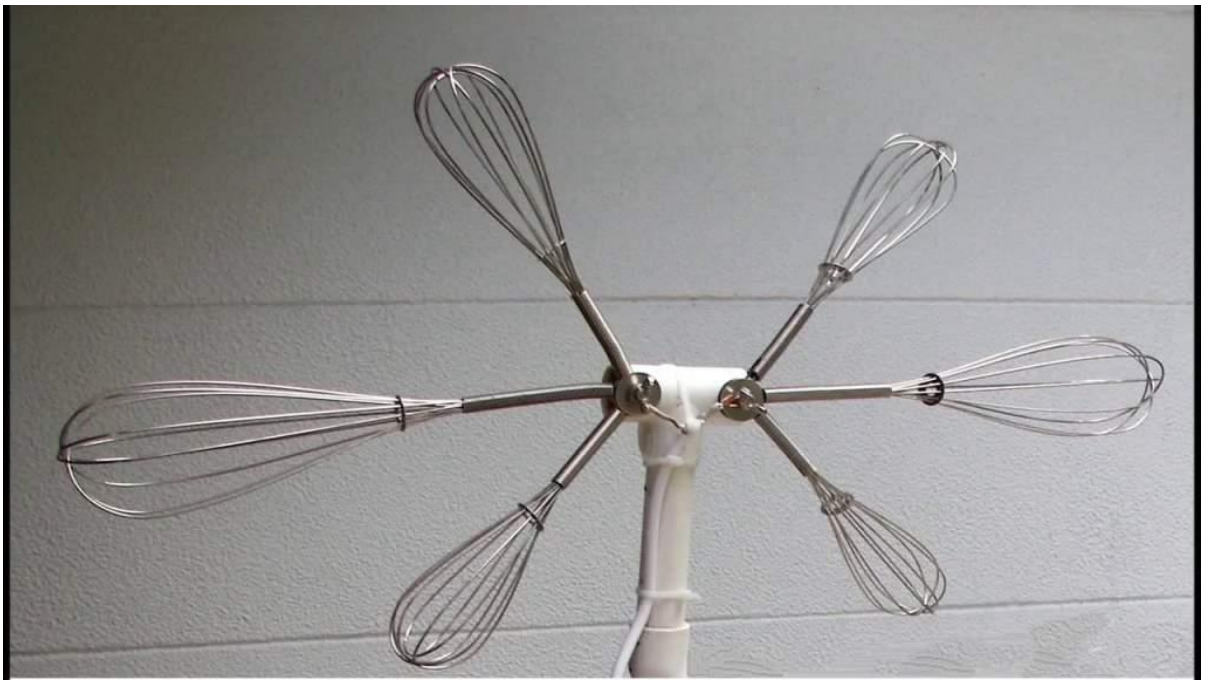
For more information go to:
https://en.wikipedia.org/wiki/Amateur_radio_satellite

https://www.google.com/search?ei=T2EqXK3BGaPm_Qakm6q4Bw&q=amateur+radio+satellite&oq=amateur+radio+satellite&gs_l=psy-ab.3..0.4392.4392..5662...0.0..0.59.59.1.....0....1..gws-wiz.....0i71.nXR4fInIEe4

Build A 430mHz Satellite Antenna!

Here is a cheap and innovative way to build an "Egg Beater" satellite antenna that is simple to build and works well according to the designer.

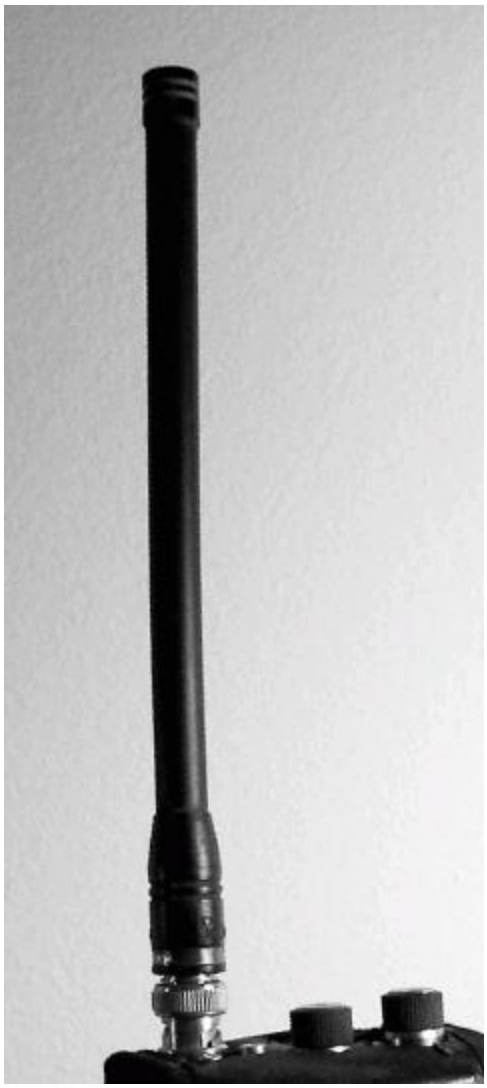
https://www.youtube.com/watch?v=fAqT8WDCrxw



More Satellite Antennas You Can Build!

https://www.amsat.org/articles/w6shp/ant_tips.html
https://www.amsat.org/cheap-and-easy-yagi-satellite-antennas/
http://www.amateurradio.bz/4_dollar_satellite_antenna.html
https://www.kb6nu.com/diy-for-cheap-satellite-operation/
https://the-eye.eu/public/Books/Electronic%20Archive/Cheap%20Antennas%20for%20LEO%20Satellites.pdf

The Rubber Ducky Antenna!



The **Rubber Ducky Antenna** is an electrically short antenna, which functions somewhat like a base-loaded whip or monopole antenna. Electrically short antennas are often used in portable equipment because a one-quarter wavelength element, necessary for electrical resonance of a linear element over a ground-plane, is often too long for convenient portable operation.

The first antenna

The first Rubber Ducky Antenna was designed for operation on the six-meter amateur radio band by Richard B. Johnson, while he was a student at a reform school, The Lyman School for Boys. It was to substitute for a vertical antenna which would have been one-and-a-half meters long (one-quarter of six meters), too long to fit into Johnson's locker when not in use. The resulting antenna was slightly less than one-third of a meter in length, and was simply a screen-door spring, with its length adjusted for electrical resonance, and covered with a synthetic rubber hose. In the period of its development, antennas on portable equipment usually consisted of telescoping rods that were extended for operation and later retracted for storage.

Construction

Electrically short antennas have considerable capacitive reactance, so to provide an approximate impedance match, it is usual to add an inductor in series with the antenna. Antennas that have these inductors built into them are called base loaded antennas. It is possible to make an antenna in which the entire length of the driven element is an inductor, configured much like a spring. In fact, if a springy material is used, the antenna becomes flexible and immune to damage. If the spring antenna is further enclosed in a plastic or rubber-like covering, it is called a Rubber Ducky Antenna.

Origin of the name

Several years after its invention in 1958, the Rubber Ducky Antenna became the antenna of choice for portable transceivers. Rumor has it that Caroline Kennedy gave the antenna its final name when she pointed to the flexible antenna on a Secret Service Agent's transceiver and announced; "Rubber Ducky." However, Dr. Thomas A. Clark, then Senior Scientist with NASA, claims to have named it in 1961 after listening to one of Vaughn Meader's comedies about the Kennedy family. In both cases, its name seems to somehow to relate to the Kennedy family.

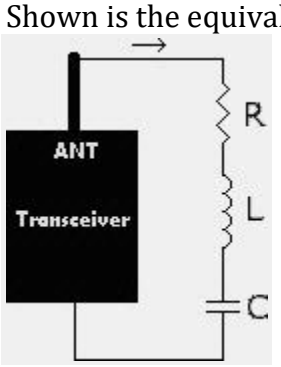
Efficiency
Because the length of this antenna is significantly smaller than a wavelength, the effective aperture is approximately:

$$A_e = \frac{3\lambda^2}{8\pi}$$

A surprising result is that even though the Rubber Ducky Antenna may be small, its effective aperture can be comparable to larger antennas. If one takes care in its design to produce a reasonably high radiation resistance, one can produce a useful antenna.

As with many monopole antennas, the Rubber Ducky requires a ground-plane or counterpoise with which to complete its electrical circuit. With handheld transceivers, this ground-plane is often only a small internal shield or the jackets of internal batteries. Modern construction techniques using nonconductive plastics for transceiver cases further reduce the effectiveness of this antenna by eliminating a conductive path to the user, which could have provided an effective ground-plane or counterpoise. The original antenna mounted on a paint can to which were soldered four brass radials. This helped make the antenna quite efficient. Modern versions eliminate this counterpoise, using the electrically resonant spring only for convenience. This often reduces the usefulness of this antenna to where it is barely adequate for its intended use.

Shown is the equivalent electrical circuit of the Rubber Ducky Antenna:



The label R represents the combination of the radiation resistance and the various loss resistances in the device. The label L represents the inductance predominately generated by the coiled spring. The label C represents the distributed capacity, including the capacity caused by proximity to nearby objects. Observe that the series-connected components complete the circuit through a virtual ground represented by the body of the transceiver. If there are any losses within this circuit such as body parts of the person using a transceiver that uses this antenna, they will exist effectively in series with the radiation resistance, reducing the efficiency of the antenna. This is a reason why antennas on portable equipment, such as handheld transceivers, do not often function well. They usually do not have a sufficient counterpoise. Rubber Ducky Antennas suffer losses greater than ¼ wave whip antennas because of the higher radio frequency currents flowing in the antenna and the parasitic resistance of the person using the device. This is a case where not all the currents in the series circuit appear the same, seeming to violate Kirchoff's laws. Of course, there is not any violation; it is that the circuit diagram is not a circuit model. The radio-frequency current in the spring near the transceiver is very large relative to the current at its end, which is only the displacement current of the antenna's capacity to the external world.

Therefore, we seem to have an instance where the current into an inductor on a schematic is not the same as the current out of it, but the spring is much
more than an inductor.

The antenna must operate at a frequency on or near its electrical resonance for it to function properly.

$$f = \frac{1}{2\pi\sqrt{LC}}$$

This is why production of these antennas is for a specific narrow frequency range. For instance, one cannot effectively use a Rubber Ducky Antenna made for an amateur radio band on an aircraft radio.

Electrical design
These are the observed electrical characteristics of an antenna constructed from a screen-door spring, resonant at 50 MHz.

Rubber Ducky Antennas have reasonable performance, but they do not have either the gain or the aperture of larger antennas. Therefore, their performance will always be somewhat of a compromise. They are difficult to characterize electrically because the current distribution along the element is not sinusoidal as is the case of a thin linear array. However, there are a few "rules-of-thumb" that can be used to design these antennas:

1. If the coils of the spring are wide (a large diameter), relative to the length of the array, the resulting antenna will have narrow bandwidth.
2. Conversely, if the coils of the spring are narrow, relative to the length of the array, the resulting antenna will have its largest possible bandwidth.
3. If the antenna is resonant, and the spring has a large diameter, the impedance will be well below 50 ohms, tending towards zero ohms with large inductors as the structure starts to resemble a series-tuned circuit with little radiation resistance.
4. If the antenna is resonant, and the spring has a small diameter, the impedance will increase towards 70 ohms.

Therefore, from these rules, one can surmise that it is possible to design a Rubber Ducky Antenna that has about 50 ohms impedance at its feed-point but a compromise of bandwidth may be necessary. Modern Rubber Ducky Antennas such as those used on cell phones taper in such a way that few performance compromises are necessary.

Some are different
The design of some Rubber Ducky Antennas is quite different from the original design. One type uses a spring only for support. The spring has an electrical short across it. The antenna is therefore electrically, a linear element antenna. Some other Rubber Ducky Antennas use a spring of non-conducting material for support and comprise a collinear array antenna. Such antennas are still called Rubber Ducky Antennas even though they function quite differently (and often better) than the original spring antenna. The Rubber Ducky Antenna has recently become known as the Flagelliform Antenna as well.

Straight Key Century Club!

Calling all you CW enthusist. Please check out the following website and calendar of upcoming CW events.

The ***Straight Key Century Club (SKCC)*** is the fastest growing group of mechanical-key CW operators in the world. First organized in January 2006, our club has grown rapidly to include thousands of licensed amateur-radio operators from all corners of the globe.

Here's how it works:

-- Membership is **free.**
-- SKCC numbers are issued for life. Once you get it, it's yours.
-- Exchange numbers using a straight key, bug, or side-swiper.

You can find the details of our *key policy here*.

To receive an SKCC number, click on the Join SKCC link at left. If you are helping someone who wants to join but doesn't use email, you can download a *snail-mail application here.*

https://www.skccgroup.com/

https://www.skccgroup.com/membership_data/member_application_form.php

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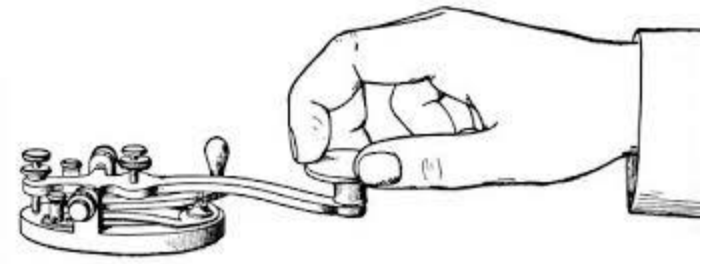

Trivia or Trivial!

December 2018 calendar. (This will be the only time you will see this phenomenon in your life)

						1
2	3	4	5	6	7	8
9	10	11	12.	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

The month of December 2018 had 5 Saturdays, 5 Sundays, and 5 Mondays. It only happens once every 823 years. The Chinese call it "BAG FULL OF MONEY".

💰💰💰💰💰💰

"Hoarding" >>> the "Hobby of Owning" (K4ELI)

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WHILE ON MANEUVERS in the Mojave Desert, our convoy got lost, forcing our lieutenant to radio for help.

"Are you near any landmarks that might help us locate you?" the base operator asked.

"Yes," said the lieutenant. "We are directly under the moon." (K4LDC)

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Working at a USCG Communications Center can be interesting. While monitoring an aircraft RTTY working channel, the following messages were copied (not verbatim) between a logistics aircraft and South Cacaos Island Base.

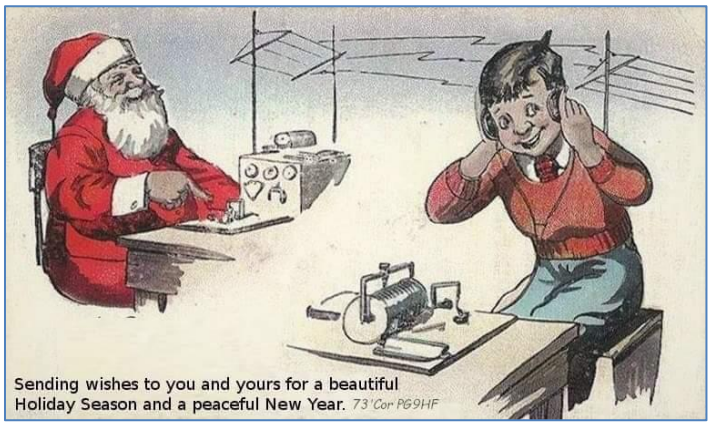
Aircraft: “Please look for lost box destined for Miami inadvertently left behind from this morning’s flight. Advise.”

Well, apparently the word “BOX” got changed to “FOX” in the RTTY transmission resulting in the following transmission back to the aircraft.

South Cacaos Isl: “Please return with 20 horses and 5 dogs to look for your lost fox.”

The moral of this true story is how 1 letter can change the entire intent of an important message, and maybe provide a little humor too. (K4CGA)

Miscellaneous Contributions!



WB4QOJ's EchoLink connection

I tried to grow my own food but I could not find any Bacon seeds for sale anywhere. (editor)

Breakfast @.....

Come join us for casual conversation, informal Q&A, problem solving and occasional humiliation at the McDonalds in Hiram (in front of WalMart).

It has a variety of food, is reasonably quick, has decent prices, and is convenient to the majority of the club members.

Visitors, spouses and friends are welcomed.

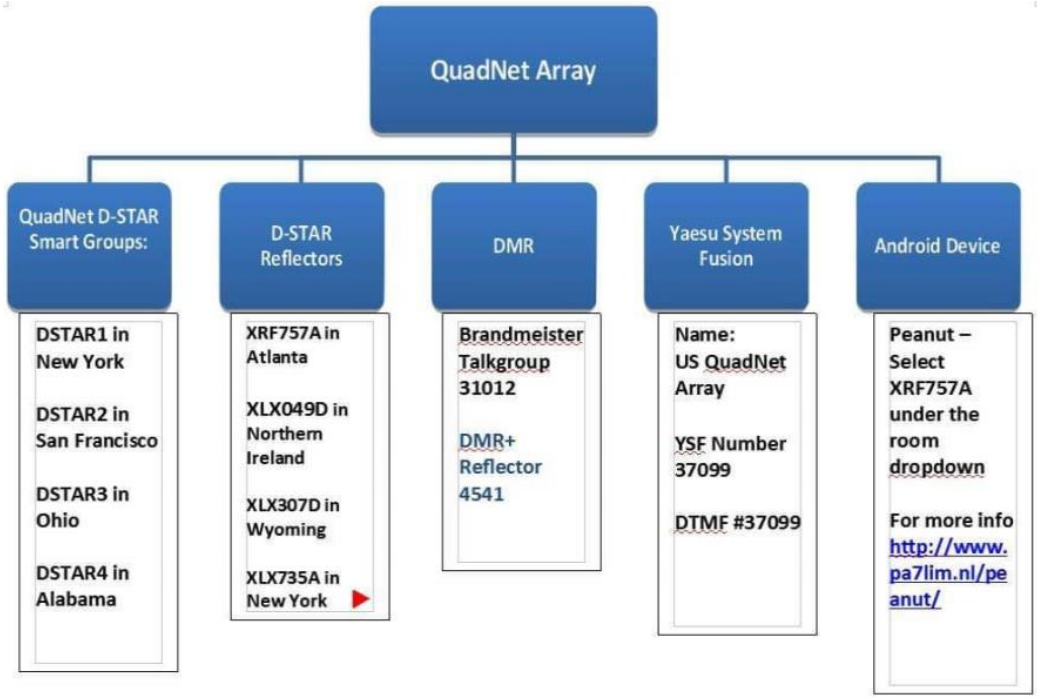
If you have any suggestions for a new location, please provide your breakfast committee with the details.

Steve – K4ELI
Chuck – K4CGA

Come Join Us!

Thursday Mornings
We Gather Around 8:30 +/-
Until ??????

QuadNet!



For more information on QuadNet, go to: https://www.openquad.net/

Recent SCARS Website Updates:

http://www.silvercometars.com/index.php

Event Photos Page Updated with SCARS 2018 Christmas Party Photos.

Send SCARS website corrections, comments, or suggestions to K4LDC (Larry) at K4LDC@arrl.net

Contest & Special Events

2019 ARRL Contest Dates - Ver B – 2 November 2019

January 2019 1 Straight Key Night 5 Kids Day 5-6 RTTY Roundup 19-21 January VHF	**February 2019** 11-15 School Club Roundup International 16-7 DX – CW
March 2019 2-3 International DX– Phone	**April 2019** **14** Rookie Roundup – Phone
June 2019 8-10 June VHF 15 Kids Day 22-23 Field Day	**July 2019** 13-14 IARU HF World Championship
August 2019 3-4 222 MHz and Up Distance Contest 17-18 10 GHz & Up – Round 1 18 Rookie Roundup – RTTY	**September 2019** 14-16 September VHF 21-22 10 GHz & Up - Round 2 21-22 EME - 2.3 GHz & Up
October 2019 **21-25** School Club Roundup 19-20 EME - 50 to 1296 MHz	**November 2019** 2-4 Nov. Sweepstakes – CW 16-18 Nov. Sweepstakes – Phone 16-17 EME - 50 to 1296 MHz
December 2019 6-8 160 Meter 14-15 10 Meter 15 Rookie Roundup–CW	**Check your emails for additional contest and special event activities**

Additional Contest Calendars

http://www.contestcalendar.com//index.html
http://www.cq-amateur-radio.com/cq_contests/cq_annual_contest_calendar/cq_annual_contest_calendar.html
http://ncjwecom/

Upcoming Special Events

Please look for K4ELI's email notices regarding contest and special events on the SCARS Group.io reflector or visit the ARRL website at:

http://www.arrl.org/special_events/search/page:2/Date.start:2016-09-14/Date.end:2016-12-31/model:Event

SCARS V.E. ACTIVITIES

SCARS/BHBC Test Session (aka South)

K4ELI and the VE Team will be testing at 7pm at Burnt Hickory Baptist Church, 5145 Due West Road, Powder Springs, on the following dates:

2019 Schedule

Jan 10 Feb 7 Mar 14 Apr 4 May 2 Jun 6
Jul 11 Aug 1 Sep 5 Oct 3 Nov 7 Dec 5

Please check the ARRL website for changes or corrections.

For more information, contact Steve Walls, K4ELI: swalls46@att.net

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SCARS/Paulding CoC Test Session (aka North)

W4TXA and the VE Team will be testing at 6:30pm at the Paulding County Chamber of Commerce, 455 Jimmy Campbell Pkwy (Hwy 278), Dallas, on the following dates:

2019 Schedule

Jan 8 Feb 12 Mar 12 Apr 9 May 14 Jun 11
Jul 9 Aug 13 Sep 10 Oct 8 Nov 12 Dec 10

For more information, contact John Reynolds, W4TXA: john-w4txa@comcast.net

All classes of license exams will be available.

BRING:

- **Original and copy of existing license.**
- **Copy of FRN # if you have a GMRS license or some other license.**
- **$15 cash----exact change**
- **Photo ID**

See the following web sites for more details:

SCARS **http://www.silvercometars.com/about.php#TEST_SESSION**

ARRL VEC

2019 Calendar

**** Don't forget our club breakfast every Thursday morning around 9am ****

	January	*February*	*March*	*April*	*May*	*June*
Meeting 1st Tuesday Date/Time:	**01-08-2019 7pm**	**02-05-2019 7pm**	**03-05-2019 7pm**	**04-02-2019 7pm**	**05-07-2019 7pm**	**06-04-2019 7pm**
Meeting Location	**Paulding Chamber of Commerce Bldg**	**Paulding Chamber of Commerce Bldg**	**Paulding Chamber of Commerce Bldg**	**Paulding Chamber of Commerce Bldg**	**Paulding Chamber of Commerce Bldg**	**Paulding Chamber of Commerce Bldg**
Meeting Activity	**Portable Operations (W4DTO)**	**Antennas Part I (K4CGA)**	**Antennas Part II (K4CGA)**	**Weather (K4DMF)**	**Remote Operations (W4DTO)**	**Field Day Preparations**
Additional Activities	TBD	Fox Hunt	TBD	GA QSOP	Family Night Dinner	Field Day
Hamfest & Conventions	Lawrenceville TechFest	Dalton, GA	Birmingham, AL Ellijay, GA	Mobile, AL Calhoun, GA	Dayton, OH	Atlanta, GA

This calendar is "Subject to change". Submit change request to W4TXA John

V2019.01

Silver Comet Amateur Radio Society

2019 Calendar

**** Don't forget our club breakfast every Thursday morning around 9am ****

	July	*August*	*September*	*October*	*November*	*December*
Meeting 1st Tuesday Date/Time:	**07-02-2019 7pm**	**08-06-2019 7pm**	**09-03-2019 7pm**	**10-01-2019 7pm**	**11-05-2019 7pm**	**12-03-2019 7pm**
Meeting Location	**Paulding Chamber of Commerce Bldg**	**Paulding Chamber of Commerce Bldg**	**Paulding Chamber of Commerce Bldg**	**Paulding Chamber of Commerce Bldg**	**Paulding Chamber of Commerce Bldg**	**Paulding Chamber of Commerce Bldg**
Meeting Activity	**Digital (Wb3ILX)**	**Computer Controls (TBD)**	**V.E Work & Adv. Licensing (W4TXA)**	**HF / VHF / 160 Band Work (TBD)**	**Hint & Kinks The Basics Pt1 (K0CZR)**	**Hint & Kinks The Basics Pt2 (K0CZR)**
Additional Activities	TBD	TBD	Club Fall Picnic	AM DX Contest	Club Elections	Christmas Dinner
Hamfest & Conventions	Cullman, AL	Huntsville, AL	SEDEC DX	La Grange, GA Chattanooga, TN Rome, GA	Lawrenceville GA Montgomery, AL.	

This calendar is "Subject to change". Submit change request to W4TXA John.

V2019.01

SILVER COMET AMATEUR RADIO SOCIETY, INC.

CONTACT US:

Groups.io Request: SilvercometARS

www.silvercometars.com

146.955 (-) (77hz)

Contact: *Club President* John Reynolds, W4TXA

Email: John-W4TXA@comcast.net

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