VOLUME XLIII, NUMBER 6

SPURIOUS EMISSIONS

JUNE, 2017

INDIAN RIVER ARC

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CLUB MINUTES

With President Dave KU0Rin attendance, the meeting began at 19:32 with the pledge of allegiance.
Visitors and Guests: Don Coy, WB4ATV, raised his hand and was welcomed.
No members found to be in need or under the weather this month.

The Minutes for the May meeting were printed in the newsletter. A motion was heard to approve the meeting minutes; after a second, the May meeting minutes were approved by acclamation.

Treasurer Larry KK4WDD reported that we have $2112.25 in checking and $1277.11 in the equipment fund. A motion was heard to approve the Treasurer's report for audit; a second was heard and the motion was approved by acclamation.
Dave provided a repeater update: on May 20th the 37 repeater had some major repairs performed with a tower climb. It now has a very good range, as confirmed by a report from Ernie K1CPO who indicated that you can reach the 37 from the Orlando airport. The 88 also had some work on the amplifier and the clock that was saying good morning in the afternoon. Both problems were fixed. Unfortunately, there is another repeater whose output is on the 88 input frequency that causes interference when the 88 is keyed up.

Vice President Viron N4VEP announced that he is a custodian at Audubon Elementary school, where he introduced ham radio to the students. He hopes to introduce ham radio at Anderson Elementary to the daycare students as well, but the school board requires insurance coverage of $1million, so he asked to be covered by the club's insurance by making this activity a club-sanctioned endeavor. A motion was heard to approve his request; it was seconded and the motion approved by acclamation.

President Dave announced his appointment of Les W9BCH to be our club EC; he will also serve as Central EC.

Field Day will be held again at the Club House this year, as 3A.
.
The group was queried about their HF, CW and QRP activity and many members had been active on HF.

Old Business: None.
New Business: None.
The drawing distributed Yaesu T-Shirts and $12 in the 50-50 pot. Shirts were won by Jane KI4ZYQ, Don WB4ATV, John KE0GG, Viron N4VEP, Dwaine KM4HCN and Sandy AK4BZ, who won the $12, as well.

Next followed a short presentation showing the Russian woodpecker over-the-horizon radar and a video of some brave soul climbing the 500-ft antenna structure all the way to the top.

A motion to adjourn occurred at 20:36 and was moved and approved.

Respectfully Submitted
Steve N4UTQ
Secretary

HAPPENINGS

"Optimizing Receiver Performance" is the topic of the latest episode of the "ARRL The Doctor is In" podcast.

ARRL has revised and updated its "US Amateur Radio Bands" charts, and these now are available for download. These are PDF documents, available in color or grayscale presentations

Registration is now under way for the 2017 USA and International Amateur Radio Union (IARU) Region 2 championships of Amateur Radio Direction Finding (ARDF), which will take place August 3-6 near Harrison, Ohio. They are an ideal opportunity to watch and learn from the best radio-orienteers in the US and from around the world.

The Rapid Deployment Amateur Radio (RaDAR) Challenge now occurs the first Saturday of April, the third Saturday of July and the first Saturday of November each year. The RaDAR challenge is a 4 hour stress test for your portable equipment and operating skill. In the Challenge, you make five contacts and move to another location. The distances vary by the transportation mode. The next challenges will be 00 UTC to 23:59 UTC on Saturday 15 July, and 00:00 UTC to 23:59 UTC on Saturday 4 November 2017. The exchange is call sign, name, RS (T) report, QTH and grid locator. Minimal distances: motorized vehicle, 6 Km, bicycle, 2 Km, foot and paddle canoe, 1 Km, wheelchair, 500 m. Aeronautical mobile

HAPPENINGS

stations are considered moving stations and can communicate at any convenient time. For more information :http://www.sarl.org.za/Web3/Members/oDocDownload.aspx?X=20161222085537waqSliCvbT.PDF

A new technology for amateur communications, particularly for emergency communications is now being introduced. This technology takes advantage of the amateur microwave bands and the bandwidth that goes with them for ultra high speed data and applications. Hams are now building radio-based high speed digital mesh networks using low cost commercial hardware adapted for amateur radio. Mesh provides flexible, high speed wireless communications that can be adapted to varying terrain types, can be rapidly deployed, are fun to build and use, and are particularly well suited to the emergency/disaster response needs of many served agencies. Read more at this site:: http://www.aredn.org/content/cq-january-2017

Field Day 2017 June 24-25. This year the club will hold Field Day activities at the SR3 club house. Talk-in on 145.37 MHz repeater. Plans are to operate 3A using phone, CW, and digital modes.

Take advantage of the contest related video content that has been posted to YouTube, courtesy of ICOM, from the 2017 Contest University. You'll find everything from "Introduction to Contesting" to "A Deep Dive into Stacking Yagis." Check out Ward, N0AX's session 6:"The Most Bang for the Buck for the Small Station" (it is not titled correctly on YouTube, nor in the initial slide).

HamSCI, the Ham Radio Science Citizen Investigation, is a platform to promote and publicize the Amateur Radio Service's primary purpose of "continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art." The first big HamSCI project involves the August 21 Total Solar Eclipse, which will be visible across a large swath of the continental U.S. Videos from the forum are on YouTube, and include an overview of HamSCI, presentations on the Solar Eclipse QSO Party, and propagation predictions for the eclipse period.

ON THE AIR

MINAMI TORISHIMA, JD1. Take, JG8NQJ will be QRV as JG8NQJ/JD1 from May 15 to July 15. Activity will be on 80 to 6 meters using CW and RTTY. QSL via JA8CJY.

Battle of Gettysburg 154th Anniversary
Jun 29-Jul 10, 0900Z-0905Z, W1G, East Berlin, PA. WO4L. 18.155 14.265 3.830 7.195. Certificate & QSL. Robert J Hess, 74 Curtis Dr, East Berlin, PA 17316. For a Beautiful full color 11x14 Certificate and or QSL or both follow QSL instructions on QRZ for W1G https://www.qrz.com/db/w1g

ARRL VHF Contest
The second full weekend in June. Begins 1800 UTC Saturday, runs through 0259 UTC Monday (**June 10-12, 2017**). More info at http://www.arrl.org/june-vhf

Thomas, OZ1AA will be active from Kenya until 15 June 2017 as 5Z4/OZ1AA. He is working on HF Bands. QSL via OZ1ACB, ClubLog OQRS, LOTW.
Ads for direct QSL: ALLIS ANDERSEN, KAGSAAVEJ 34, SOEBORG DK-2860, Denmark.

JR6DRH is currently active from Koror Island, IOTA OC - 009, as T88RH. He is working on HF Bands CW, SSB, Digital modes. QSL via home call.
Ads for direct QSL: Munehiro Isozaki, 29-18, Hisatome,Kawaura, Amakusa-City, Kumamoto 863-1214, Japan.

GREECE, SV. Members of the Radio Amateur Union of North Aegean are QRV as J48GEO from the Geo Park on Lesvos, IOTA EU-049, until June 23. Activity is on 160 to 10 meters using CW, SSB and various digital modes. During the Geopark weekend they will be located at the Natural History Museum of the Lesvos Petrified Forest. QSL direct to SZ8LSV.

VK Shires Contest, Jun 10, 0600z to Jun 11, 0600z; CW, SSB; Bands: 80, 40, 20, 15, 10m; VK: RS(T) + Shire, non-VK: RS(T) + CQ Zone; Logs due: July 1.
DOMINICAN REPUBLIC, HI. Didier, F5PLR will be QRV as HI9/F5PLR from Las Terrenas from June 6 to July 4. Activity will be on 30, 20 and 15 meters. QSL via operator's instructions.

Gray Line Propagation by Armando Delgado, KN4JN

As we progressively descend into the low solar cycle, the available bands and duration of propagation openings diminish rapidly. For hams hoping to get dx contacts, this means more time at the radio listening for those elusive openings during daytime, plus more time after dark trying for a low band contact. Either way, doing dx is becoming harder, and hams will need to resort to every trick in the book to get those elusive contacts.

One of these tricks, often ignored or under-appreciated, is the gray line propagation, a unique phenomenon that occurs twice a day during that brief transition from night to day and day to night of sunrise and sunset. Because of the height of the ionosphere above the Earth, which ranges from 60-180 Km (30-100 miles), the changes in ionization happen at different times in the different layers, allowing shifts in the propagation pattern of radio waves. These of course are the F, E, and D layers that affect radio waves differently according to frequency.

One must keep in mind that sunrise and sunset happen simultaneously on opposite sides of the globe. As darkness advances on one side of the Earth, light appears in the opposite, all in a steady sequence brought about by the rotation of the Earth on its axis. The changes in ionization in the ionosphere caused by the changing solar irradiation are identical but reciprocal on both sides. In the sunrise side, the ionization starts at the higher layers first even before the sun appears on the horizon and then moves downward as the sun rises. In the sunset side, ionization diminishes first at the lower layers and then gradually fades upwards as the sun drops below the horizon. At some point in time, the shifting ionization pattern is the same on

Gray Line Propagation

both sides. This is the time when the upper layers are ionized but the lower ones, the D layer in particular, are poorly ionized. The end result is a tunnel effect that permits radio waves to propagate freely along this corridor. All frequencies are affected by this phenomenon, but the lower frequencies to a greater extent. As you may imagine, this magical stage at any specific location is brief, lasting only minutes, but it may allow contacts along this corridor from around the world.

One wrinkle in this otherwise smooth process is caused by the tilt of the Earth's axis of 23° with respect to the Earth's orbit around the sun. This tilt brings about the different seasons and also causes the gray line to shift constantly in relation to the Earth's geography. The end result is that the areas of the world affected at sunset and sunrise will be different as time passes. This angle shift peaks at the solstice, summer and winter, and is in the middle at the spring and fall equinoxes, the only times of the year when the gray line follows a north-south alignment.

Before the advent of the Internet, predicting the path of the gray line required studying solar tables to figure the times of sunrise and sunset, but today the Internet has multiple web sites that provide visual presentations of the real-time gray line. This makes it easy to plan the times of operation. Two such web sites are

http://www.voacap.com/p2p/index.html

http://www.w8mrc.com/dx/propagation/

The *voacap* site has propagation predictions as well as an image of the gray line. The *w8mrc* one has a gray line image that can be time-adjusted forwards and backwards by one hour. Either site will show what parts of the world are affected by the gray line both at sunrise and sunset simplifying the operating planning process.

The gray line, besides the propagation corridor, also creates another propagation phenomenon that affects radio signals in the east-west route and for the same reasons as the formation of the corridor. During sunrise, the part of the world west of the gray line is still in the dark and lacks ionization, except in the upper fringes of the ionosphere as the sun approaches the horizon, where the sun radiation begins its effect before sunrise. The lower fringes where the D layer resides will not get ionized until much later. Low frequency radio waves approaching this area from the west will travel freely up to the gray line, but the high ionized layers will behave like a concave mirror and force these signal down, thus causing an amplification effect. This effect, according to some gray line propagation experts, actually peaks about 30 minutes after sunrise. This makes sense because at that point the upper D layer is beginning to ionize and thus concentrates the concave mirror effect into a much narrower space. The reverse process occurs at sunset with the eastern portion of the world going dark and the D layer gradually dissipating. At this time, the peak propagation happens just before sunset.

Although gray line propagation is affected by solar activity, it still provides possibility for radio contacts at times when bands are otherwise unusable.

The 40-meter band is the premier low-frequency band, with long-path openings to central Asia from October through March that are more reliable than 20 meters. Peak propagation spans about 30 minutes and drops off slowly for an hour or more. Long-path fans benefit from a convenient beacon located in Kazakh (UL7) that transmits the letter v at 10 WPM at 7002 kHz. This signal is also audible short path in the evenings around 0200 to 0300 UTC.

For polar paths, the 10-meter band is the most difficult of the high-frequency bands, requiring quite a high MUF and quiet solar conditions. In the eastern US, for example, this band will open to the southeast from just before to just after sunrise, depending on solar flux levels, and swing northward into Europe and Western Asia in another 15 to 20 minutes. From the eastern half of the US, the best times to work central Asia on this band are usually within the first two hours following sunrise. In the spring and fall, there is often a long-path (southeast) opening to the Far East and the South China Sea region in the same time period.

Understanding all the subtleties and quirks of propagation is the secret to successful contacts, especially during the low solar cycle years.

W1AW CW PRACTICE TRANSMISSIONS

7 PM EST Slow CW : 5-15 WPM Mon, Wed, Fri

7 PM EST Fast CW: 35-10 WPM Tue, Thu

FREQUENCIES: 1.8025, 3.5815, 7.0475, 14.0475, 18.0975, 21.0675, 28.0675, 147.555

W1AW CW Qualifying Run

Jun 7 10 PM Wed 10–35 WPM

Jun 20 7 PM Tue 10–35 WPM

Editor's Note:

Send comments about the Newsletter or to contribute information or articles to the Editor's email address:

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