W6SBA SOUTH BAY AMATEUR RADIO CLUB

SPECIAL SERVICE CLUB

ARCOver

November 2020

A Community Service Organization Dedicated to Amateur Radio Since 1970

In this issue:

President's Message

SBARC members,

What's the best part of November?? Thanksgiving, the food and family. Having the in-laws and outlaws over. Probably won't be as many out of towner family visiting this year since they should have to sit around at two arm's length in a mask. Should make for a little different holiday season. For us Hams, we can easily social distance with a microphone in one hand and a turkey leg in the other! Make the best of it but remember that the COVID bug is still out there.

The one place you can help out your club with is taking on a council position. I can't encourage you enough on this opportunity to support your club. We are looking for a few good members to fill positions on the SBARC Council. For President, you need to have been on the council for a year to qualify to run for the office of President. For all positions, you must have a valid amateur radio license and be a member in good standing (paid dues). We are very much interested in your suggestions and or idea's so please let us know. We plan to offer the candidates for 2021 at the November general club meeting on Zoom. Nominations from the floor will be accepted at the November 19th meeting. Please let our Election Committee Chair for the South Bay ARC, Joe-WB6MYD, know your intent as soon as possible.

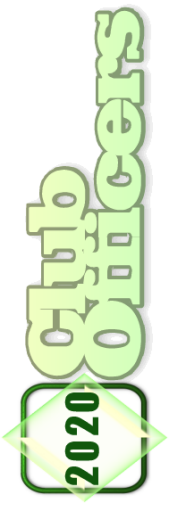
On November 6, 2020 at 9AM, Tom KI6RC and Joanne KM6BWB had another balloon launch from TMMC. This balloon is identified under the call sign KM6BWB-1. Lets hope for a successful flight with at least a couple of orbits over new ground. You can follow the journey on Google's aprs.fi and enter the call sign ID. You can certainly refresh your geography while monitoring the balloon flights! And, that's likely what her middle school kids will do. Joanne is a STEM teacher at Wiseburn Unified.

The November meeting will be held on Zoom. The club leadership will send out a Zoom invite. Click on the link, enter the password, and you should be good to go. This month we will present James (Jay) Flynn WB6AWX, Professor at Cal State University Northridge. "Jay will be presenting 2U Cubesat Spacecraft designed, built, and tested by CSUN students and faculty" Jay is a very accomplish in the development and mission support of CSUNSat1 Cubesat spacecraft. You don't want to miss this presentation. Please join us on Zoom.

Upcoming monthly club activities include, the SBARC club meeting on November 19th on Zoom, and at the time of writing this, the TRW/NGC swap meet remains cancelled. After the swap meet a few of us use to head over to Denney's. This has been suspended until after the COVID shutdown.

Thanks for your club participation, stay healthy, stay in touch, and see you at the next SBARC virtual meet up in November!

73's…
Scott-N6LEM



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Past Pres: OPEN

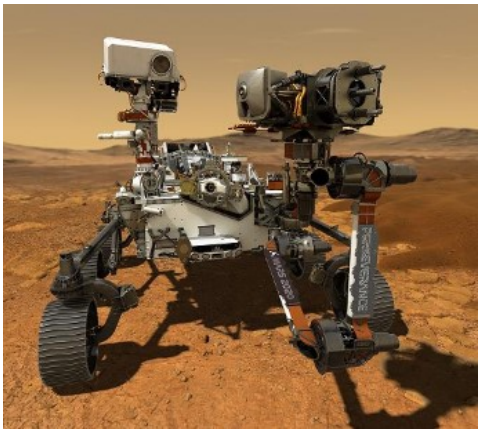
November Meeting

November 19th at 7:30 p.m.
on Zoom

Expect an email with the invite to the meeting. Click the link in the email and Zoom software launches and you join.

Topic: 2U Cubesat Spacecraft presented by James (Jay) Flynn -WB6AWX

James (Jay) Flynn – WB6AWX, Professor at Cal State University Northridge. He is a Staff member in the Dep. of Electrical and Computer Engineering. Jay got his license in Apr 1969 while in grade school and is now Extra class.



With the successful launch of the Mars 2020 mission, the Perseverance Rover and Helicopter are on their way for a February 2021 landing on Mars.

The team to design build and fly the mission, includes several CSUN grads, many of whom worked on CSUNSat 1, the 2017 mission which launched CSUN first satellite. CSUNSat 1 successfully completed its joint mission with JPL in 2018 and deorbited as planned in 2019.
70 students, led by Dr. Sharlene Katz, designed and built CSUNSat 1 over the course of four years and managed the on orbit mission.
Sharlene-WB6FFE, SK connected with Jay and worked with her on this project along with the CSUN students.

His presentation will show you how amateur radio plays a big part in this including the design in the environment on its way to Mars. A story so mind boggling that you do not want to miss. Please join us on Thursday November 19, 2020 at 7:30PM. By invitation only.

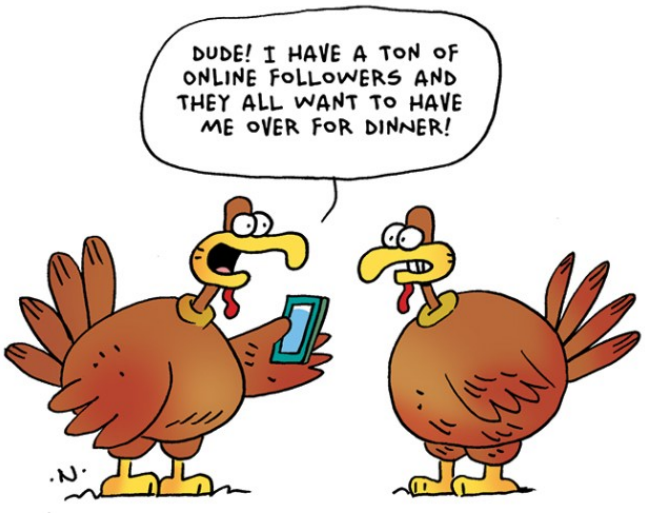
RSGB Seeks Regulator's Records of Complaints about On-Air Behavior

ARRL.com 10/28/20

The Radio Society of Great Britain (RSGB) has filed a freedom-of-information request to UK telecommunications regulator Ofcom in an effort to find out how many complaints it has received regarding the on-air behavior of radio amateurs. The RSGB is seeking any complaints filed between January 1, 2015, and December 31, 2019.

"The RSGB receives complaints from time to time regarding incidences of deliberate jamming and foul or inappropriate language on the air," the RSGB said, noting that its Operating Advisory Service (OAS) provides advice about how to deal with these problems. The RSGB said it wants to hear from radio amateurs who have reported similar problems directly to Ofcom, after following OAS's advice during the same time.

"The reports should only cover deliberate jamming, use of foul language, or language that would be considered a 'hate crime,' as defined by the Crown Prosecution Service/ Procurator Fiscal," the RSGB said. "It is important that you can fully document your complaint to Ofcom with dates, method of complaint, and Ofcom's response."



UNDERSTANDING NVIS

Paul Denisowski | Version 1.0 | 07.2020

ROHDE&SCHWARZ

Make ideas real

[Understanding NVIS will be covered over several issues of the newsletter breaking down the paper into smaller segments]

NVIS Antennas

Basic NVIS Antenna Principles: Most antennas intended for HF skywave communications are designed to have a low take-off or radiation angle. This lower take-off angle causes a lower angle of incidence with the ionosphere and hence longer distances due to lower refraction angles. In traditional, long-distance applications of HF skywave, an antenna that sends too much energy vertically is sometimes unflatteringly referred to as a "cloud warmer." On the other hand, NVIS antennas are specifically designed and installed in order to have a high radiation angle, typically 75° or higher: the majority of power is "going up" instead of "going out," so to speak. The most Rohde & Schwarz | Educational Note Understanding NVIS 11 common method used to achieve this high take-off angle is by using an antenna that is located close to the ground.

NVIS antenna patterns: One of the best ways to understand the difference between traditional, low-incidence angle skywave antennas and NVIS antennas is to compare antenna patterns. Since NVIS can be implemented as a dipole, a useful comparison can be made between a "standard" HF dipole and a "NVIS" dipole. A "standard" HF dipole is usually mounted at a height that produces a relatively low elevation angle (Figure 9). The relationship between elevation angle and antenna height can be somewhat complex, but generally speaking, the higher a dipole is mounted above the ground, the lower its elevation or "take-off" angle. A lower elevation angle works well for long-distance HF skywave communications because greater distances can be achieved when the transmitted signal is incident to the ionosphere at lower angles. A dipole being used for NVIS is characterized by a much higher or more vertical elevation pattern. As will be discussed shortly, the primary method of creating this type of vertical radiation pattern is by moving the dipole closer to the ground. A higher elevation angle is necessary for NVIS, but clearly would not yield satisfactory results when used for traditional long distance skywave communications

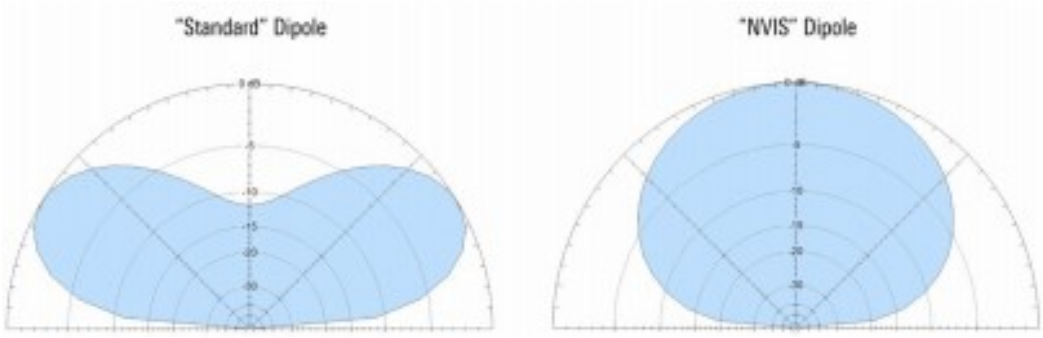


Figure 9 - Comparison of elevation patterns (traditional vs. NVIS)

Azimuth patterns (Figure 10) show the distribution of energy, or gain, in the horizontal plane around the antenna. A half-wave dipole suspended at "normal" heights above ground for traditional HF skywave communications has a directional pattern, with the majority of gain being broadside to the antenna. In a typical NVIS antenna, the azimuth pattern is roughly omnidirectional, meaning that the orientation of the NVIS antenna is less important: if the NVIS dipole were rotated 90°, the azimuth pattern would remain essentially the same. The azimuth pattern of the NVIS antenna shows that coverage is fairly uniform within the receive area – the NVIS antenna does not favor one azimuth or horizontal direction over another. This is especially important in typical military or disaster relief scenarios, where the location of the receiving station may not be known, where there are multiple receiving stations, or where the receiving station is "on the move." In these types of situations, a directional antenna pattern could be counterproductive since there may be no reliable way to know the direction in which the antennas should be pointed.

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NVIS Antennas Continued

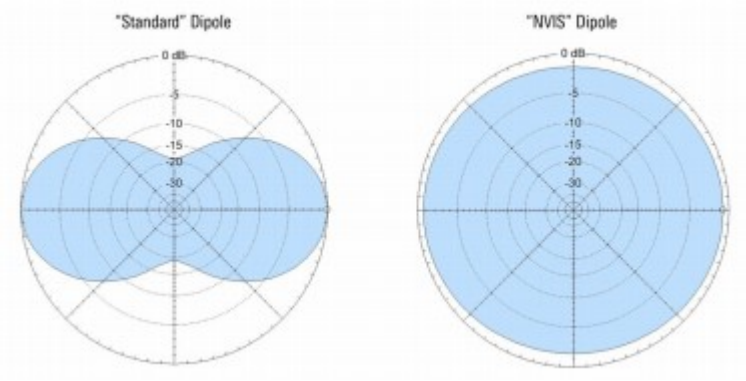

Figure 10 - Comparison of azimuth patterns (traditional vs. NVIS)

NVIS antenna types NVIS describes a certain type of antenna, or more precisely, a certain radiation pattern or elevation angle produced by an antenna. There are however many different types of antennas that can be used or adapted to produce the high incidence angle NVIS antenna pattern. Given the most common applications of NVIS, socalled "field expedient" antennas; that is, antennas which are designed for portability and ease of setup, are often used as NVIS antennas. Some of the most frequently used types of NVIS are dipoles and inverted Vees, the latter being a variant of the standard horizontal dipole. Unbalanced wires are also used in NVIS, and there are a number of different types of vehicle mounted NVIS antennas. Other types of NVIS antennas are usually found in fixed-site applications where low-profile, portability, and/or ease of setup are less of a concern. These include conical spiral and vertical log periodic antennas, among others.

Dipole: The standard half-wavelength dipole used widely for low-angle HF skywave propagation can also be adapted for use in NVIS applications. A traditional skywave dipole is usually positioned roughly a half-wavelength above ground. In order to create a more vertical radiation angle, a NVIS dipole needs to be much lower, usually approximately 0.2 wavelengths above the ground. For example, if the operating frequency were 7 MHz, a NVIS dipole would be erected approximately 8 meters above the ground. Generally speaking, the lower the active element, the higher the radiation angle. To some extent, the optimum antenna height is also a function of ground conductivity: the higher the ground conductivity, the lower the optimal height. Because of this, the use of an optional reflector element has sometimes been recommended, for example, when the soil has very low conductivity such as sand or rock, or if the dipole is high above the ground. It does however remain unclear how much of an advantage this optional reflector provides in practice, and in most cases NVIS dipoles do not have a reflector installed under them. One final note regarding NVIS dipoles: if a single dipole is used for operation over a wide frequency range, an antenna tuning unit is often needed, but a set of dipoles, or a socalled "fan dipole" can also be used for NVIS applications to provide better matching over a wider range of frequencies.

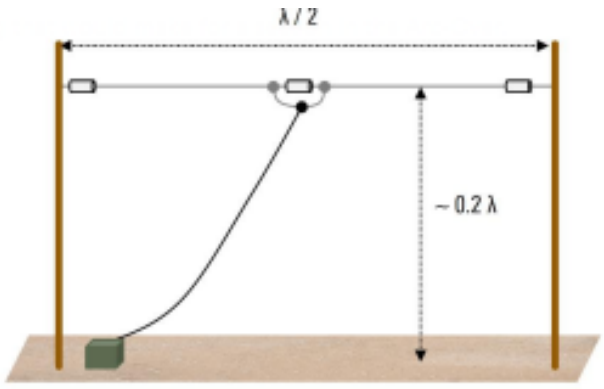

Figure 11 - NVIS dipole

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NVIS Antennas Continued

Inverted Vee: An inverted Vee is a variant of the horizontal dipole, with the center of the dipole being supported by a vertical mast and the ends being close to or near the ground. A very common implementation of the inverted Vee in NVIS uses two dipoles, often positioned at roughly right angles to each other. This arrangement is sometimes referred to as a "turnstile" antenna. Using a pair of dipoles helps to overcome polarization-related fading. One of the main advantages of an inverted Vee over a standard horizontal dipole is that this type of antenna is easy to erect: it has only one central support and therefore can be raised by a single person. When using an inverted Vee for NVIS, the apex or peak of the mast should however still be kept low, usually only slightly higher than the height of a horizontal dipole. A lower height mast also ensures that the apex angle remains low, which is important for obtaining the desired vertical radiation pattern.

Figure 12 - Inverted Vee (turnstile configuration)

Unbalanced Wire: Dipoles are balanced antennas, but unbalanced antennas can also be used for NVIS. An inverted L is one example of an unbalanced NVIS antenna. The name "inverted L" refers to the shape of this antenna. Inverted L wire antennas are most commonly created by connecting a horizontal flattop to a vertical downlead. The antenna then works against ground or against a counterpoise if necessary. Like most other unbalanced antennas, an inverted L radiates along its entire length if the radio is connected to the end of the wire. Inverted L's are also a popular choice for vehicle-mounted NVIS antennas.

Figure 13 - Unbalanced wire (inverted L)

Mobile NVIS antennas: NVIS antennas can and often are deployed on vehicles. Loops are a popular choice for vehicle-mounted NVIS antennas because they allow the use of NVIS even when the vehicle is in motion. The standard vertical whip antenna found on many vehicles is a poor choice for NVIS due to the nature of its radiation pattern, but this type of antenna can often be bent or tied into a horizontal position for use as a NVIS antenna. In this configuration, the best performance is usually achieved by tying the antenna backwards, i.e. away from the vehicle. Bending the mast backwards has the advantage of reducing out of phase currents generated in the bodywork of the vehicle, but this also usually forces the vehicle to be stationary. Alternatively, the whip can be tied or fastened in the forward position, i.e. over the vehicle. This configuration allows the antenna to be used in motion, although at the cost of lowered efficiency and a less optimal radiation pattern. Generally speaking, a "proper" dedicated loop antenna is a better choice than an improvised loop made by bending a whip antenna in either direction. Another common NVIS antenna variant used in mobile applications (and particularly in airborne applications) is the "towel bar." Towel bar antennas have the advantage of being low-profile and sturdy. A double towel bar arrangement is sometimes used to increase the effective size of the antenna and thereby increase the antenna's bandwidth performance. Electrically, towel-bar antennas can be implemented to operate as dipole, loop, or inverted-L type antennas.

Figure 14 - Vehicle mounted loop antenna

Figure 15 - Towel bar style antenna

NVIS Antennas Continued

Conclusion: NVIS is a special case of HF skywave propagation and uses antennas intended to produce very high take-off angles, typically 75° or higher. Unlike traditional low-angle skywave signals, the signals from a NVIS antenna are returned from the ionosphere almost vertically, and thus NVIS can provide local or regional coverage as well as coverage in challenging environments such as mountainous or jungle regions. The omnidirectional coverage typically provided by NVIS makes antenna siting and orientation less critical compared to traditional HF skywave antennas. This flexibility facilitates communication with stations whose locations are not well known and also makes NVIS well-suited for use with temporary or field-expedient antennas. From an operational standpoint, using NVIS decreases probability of intercept, complicates ground-based direction finding by an adversary, and provides greater immunity to groundwave jamming. The main challenge when using NVIS is that it only works well at lower HF frequencies, typically in the range of 2 to 10 MHz, with the maximum frequency being primarily a function of time of day and current solar conditions. NVIS is an antenna-based technology but can be implemented using a variety of different antennas. One of the more commonly encountered implementations of NVIS involves one or more dipoles mounted close to the ground, either horizontally or in an inverted-Vee configuration. Unbalanced antennas such as inverted Ls can also be used, and various types of loop antennas are often found in vehicle-mounted or mobile applications. The ability of traditional, low incident skywave propagation to provide long-distance or global coverage is one of reasons for renewed interest in HF as a supplemental or backup communications system. NVIS complements traditional HF skywave by providing robust, reliable local communications under a wide variety of challenging conditions and thus is a key component in the recent "rebirth" of HF.

Some Thanksgiving Trivia

What year was the celebration that is most commonly considered to be the first Thanksgiving? ***1621***

This is the celebration that people most often talk about when they are talking about the “first” Thanksgiving. But there are others that are claimed to be the first Thanksgiving. There was another celebration in Plymouth in 1623 and one in Boston in 1631 that people claim was the actual first Thanksgiving. In reality there were lots of Thanksgiving celebrations in North America before 1621 as well, because days of Thanksgiving were often celebrated after good events that were deemed to have the hand of God behind them.

Under which president did Thanksgiving become an annual holiday? ***Abraham Lincoln***

Which president was the first to give a turkey a presidential pardon? ***Ronald Reagan***

John F. Kennedy was the first president on record for unofficially sparing a Turkey in 1963. But it wasn’t until the Reagan administration in 1987 that a turkey was given an official presidential pardon as a joke. Despite it being a joke, the turkey was spared and put into a petting zoo. In 1989 George H. Bush made it an annual tradition and each president following him has carried on the tradition.

What are turkey chicks called? ***Pults or turkeylings***

What is the wobbly red piece of flesh on top of the beak of a turkey?
A snood and the red bit of flesh under the beak is called a wattle.

What state raises the most turkeys? ***Minnesota***

In what century were the first pumpkin pies as we know them made?
The 17th century (1600s)

Although the pumpkin is native to North America, the pumpkin pie was actually first made in England and Europe. It wasn’t until the 19th century that pumpkin pies as we know them started showing up in American cookbooks.

CALENDAR

Council Meeting - **4th Wednesday** of the month
Call Joe - WB6MYD (310) 328-0817

Club Meeting - **3rd Thursday of the month**
November 19, 2020 - 7:30 p.m.

Via Zoom
(look for email invite from
jmlanphen@gmail.com a few days before)

Club Nets - **W6SBA WEEKLY NET**
Every Thursday @7:30pm
(except the night of club meetings)
PVUSD EMERGENCY NET
1st Tuesday of the month
09:30 Hours on the W6SBA repeater

TRW Swap Meet **Cancelled Until Further Notice**

VE Sessions - **Scheduled on Saturday of even months**
Contact Betty, N6VZF, with questions
(All VE sessions are scheduled for Room 4 in the Health Conference Center)

Social Event - **Contact: Joe WB6MYD**
Phone: (310) 328-0817
jmlanphen@gmail.com

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224.38 MHz ·PL - 192.8 Hz Offset -1.6 MHz
(See Calendar for Weekly Net Times)

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W6SBA

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