Smoke Signals

Newsletter of Fullerton Radio Club

July 2025

President's Column

Incommunicado

Having instant connectivity has become so much a part of our lives, it's surprisingly annoying when it is interrupted.

Frequently during my camping adventures, I'll spend a few days in a location with no cell service, and therefore no internet access. That's when I am reminded how frequently I:

- Look something up
- Check / read / send email or messages
- Check the weather forecast
- Look at an online map

At a TAG meeting a couple of months ago, a couple of us mentioned that we were trying out Apple's new satellite text messaging. The way this works, is if you find yourself in a place with no cell reception, and you open the messages app, your phone will alert you that there is no cellular service and then ask you if you would like to check / send messages by satellite. It's very convenient and I have been using it lately. Connectivity problem solved (at least for messages - still no email or web)? Not so fast!

As it turns out, having *a little*cellphone coverage is worse than having *no* overage.

This week, I have been in a location where there is *just* enough signal (1 bar of LTE) to make my phone *think* I have connectivity - except I really don't. It will allow me to compose a message and attempt to send it, only to allow me to watch the progress bar sloooowly move from left to right and then… stop. Minutes later, it gives up with a "message failed to send" error.

But what about that satellite thing you were just talking about?

That "satellite thing" works perfectly when there is *no* terrestrial cell signal, but if there is a (tiny, uselessly weak) signal, it refuses to offer the satellite option.

So I'm sitting here with *_not enough_* signal to send/receive messages but *_too much_* signal to use text-by-satellite.

Suddenly it's 2024 again!

What's up with security?

#2 in a series by Ray Rounds K6RAX

Let's talk about passwords. They're like the secret codes that unlock our digital worlds. From banking and email to social media and shopping, we use them everywhere. So, it's really important to make them strong, unique, and well-managed.

Now, let's talk about what makes a **strong password**. Forget about using your pet's name, birthday, or "password123." Hackers will try those first, and they often use automated programs that can run through millions of common phrases in a flash. A real strong password is like a secret cocktail of characters: uppercase and lowercase letters, numbers, and symbols. The longer, the better! Aim for at least 12 characters, but if you can, go for 16 or more. Think of a passphrase, like "My!Dog!Loves! Eating!Pizza!2025" – it's long, has different types of characters, and you'll remember it, but it'll be hard for a hacker to crack.

(continued on page 5, column 2)

HamSCI 2025 Meteor Scatter QSO Party

by Rich Belansky KG6UDD

If you have ever been interested in exploring the meteor scatter mode included with the WSJT software suite, then an opportunity awaits you this coming August and December. During the August Perseid meteor shower, the HamSCI organization is hosting a Meteor Scatter QSO Party (August 11-12) using the WSJT MSK144 communication protocol.

First a little background. HamSCI (Ham Radio Science Citizen Investigation) provides a forum for various collaborations between professional researchers and the amateur radio community. The emphasis of HamSCI is radio propagation research with scientific focus on the study of the upper atmospheric layers and space physics. The forum coordinates and organizes various programs and campaigns providing opportunities for hams and amateur scientists to participate in radio science investigations. In addition, to advancing scientific research, HamSCI is very active developing new technologies and providing both educational and outreach programs to the amateur community and promoting amateur radio to the public.

Ham Radio Science Citizen Investigation
(www.hamsci.org)

What was once considered a specialized and somewhat “beyond the reach to the average ham” communication method, the meteor-scatter mode is now within reach to those who are already familiar with the weak signal propagation modes JT65 and FT8 provided by the WSJT software suite. In the past, communication via radio wave reflections from the ionization trail left by a streaking meteor in the ionosphere required a relatively high-gain antenna (but not too narrow of a beamwidth in order to illuminate more of the sky), a lot of RF power and a very quick CW copy by the operator. Traditionally, meteor scatter propagation primarily has been observed on the higher amateur radio VHF frequency bands (primarily the 6 meter and 2 meter bands), however, this upcoming HamSCI event is specifically interested in meteor propagation on the upper HF (10 meter) band.

Recently (January 2024), the FCC officially updated an archaic restriction regarding digital emissions on HF bands. The original baud rate allowed for on the 10 meter band was a symbol rate of 1200 baud, thus preventing the 2000 baud MSK144 mode being used. The FCC eliminated this baud rate limit and replaced it with a maximum bandwidth cap of 2.8 kHz

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FRC July 2, 2025 Board Meeting Minutes

The monthly FRC Board Meeting was called to order by President Bob Houghton AD6QF at 5:30 pm on Wednesday, July 2, 2025.

Board Members present: Bob Houghton AD6QF, Robert Gimbel KG6WTQ, Ray Rounds K6RAX, Larry McDavid W6FUB, Walter Clark, and Bart Pulverman WB6WUW,

Board members absent: Gene Thorpe KB6CMO (computer failure)

The June Board Meeting Minutes were reviewed and approved without amendment.

Treasurer's Report:

- New deposits: Ted Schulman membership $20 + interest $0.02
- New expenditures: $51.65 reimburse Larry McDavid for AITP food
- Bank balance: $6,010.14 as of July 31 bank statement.

Membership:

- New members: Ted Schulman KO6FKX
- Bob's records show 27 paid members, plus 1 life member to date.

Old Business: None

New Business:

- Saturday in the Park 7/12
- Summer net controllers

Meeting was adjourned at 6:00 PM

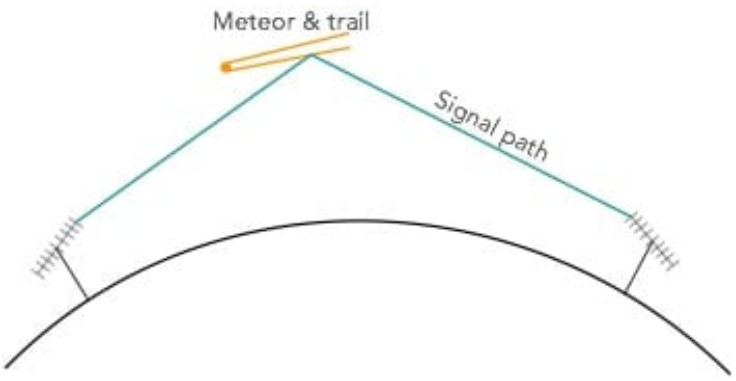
Submitted by Bob Houghton AD6QF, President

which modern digital protocols (including MSK144) could meet.

In addition to the ability to use the MSK144 protocol on 10 meters is the potential advantage of wavelength-dependent scattering properties exhibited by meteor ionization trails. The longer wavelength of the 10 meter band may provide enhanced meteor scatter detection due stronger scattered power and signal duration compared to the 6 meter band.

The HamSCI Meteor Scatter QSO Party is an on-the-air experiment to investigate HF meteor scatter by engaging the amateur radio community to help generate a geographically diverse signal report database using the

Meteor Scatter Propagation



MSK144 digital mode. While the focus of this event is the 10 meter band (28.145 MHz), the 6 meter band (50.260 MHz) will also be part of the experiment to provide comparison data. Both the August 2025 Perseids (Aug 11-12) and the December 2025 Geminids (Dec 12-13) meteor showers are the designated event dates for this "party".

Given the popularity of FT8 on 10 meters, HamSCI researchers are hoping to engage many of these same operators across a wide geographic region who already have stations equipped with both the hardware (transceiver and sound card interface) and the WSJT software to use the MSK144 digital communication protocol for meteor scatter.

MSK or *Minimum Shift Keying* is a continuous-phase frequency shift keying (FSK) modulation using 1 kHz and 2 kHz tone frequencies (centered around 1.5 kHz) with message frames composed of *144* bits (message content, forward error correction and sync), thus, MSK144. This mode, included as part of the WSJT-X software installation, is designed for very short-duration meteor scatter contacts using 72 milliseconds transmission bursts. Similar to the FT8 mode, MSK144 is easy to configure (selecting setup options) and can be used with a modest antenna (e.g. basic dipole) with relatively low power (while 100 Watts is better, however, success can be achieved with lower power levels).

Operating MSK144 is a bit different compared to FT8. QSOs occur with alternating 15 second transmit/receive (T/R) sequences and signal reception is decoded real-time (message appears as soon as it is received). Most of all, this mode requires some patience on the part of the operator as meteors are a bit unpredictable. However, meteor showers (there are six major ones each year) provide great opportunities to experience this propagation mode. Although meteors are often streaking across the ionosphere throughout the day, the optimum time to operate meteor scatter is early morning (as the Earth rotates about its axis and orbits around the Sun, the Earth moves into meteor streams at sunrise).

The details of setting up and operating MSK144 (including examples of waterfall spectrum plots of meteor scatter "pings") are described in the WSJT-X User Guide (https://wsjt.sourceforge.io/wsjtx-doc/wsjtx-main-2.6.1.html). Although focused on the 6 meter band, a very good introduction and thorough overview to the MSK144 mode is described in a recently updated book (brought to my attention by Bob Houghton, AD6QF) titled *Magic Band Revealed* by Jim Wilson, K5ND (https://kbi.dpx.mybluehost.me/magic-band-revealed-ebook-download/).

Specifically, the HamSCI meteor scatter event is interested in both two-way (transmit/receive) QSO contacts and one-way (receive only) monitoring reports. Similar to other HamSCI events, one can participate as part of a contest or just as an individual contributor to the database. An important setup step with the MSK144 mode when participating in this event is to enable the PSKReporter Spotting option. This option occurs in the background and uploads meteor scatter reception ("spotting") reports to the PSKReporter.info website. HamSCI researchers are also interested in

recorded WAV files of decoded meteor "pings" recorded with the WSJT software (initially stored on your local hard drive and later transferred later to a designated server). Both PSKReporter data and WAV files will be downloaded by researchers after each event (August and December) to investigate reception patterns (e.g. geographic distribution), signal strength and (possibly) duration of meteor scatter reflections.

Some of the initial questions HamSCI researchers hope to address include:

1. Geographically, what are the distances covered due to the enhanced propagation effect of meteor scatter at HF frequencies?
2. What are the typical duration times for meteor scatter reflections at 28 MHz (compared to 50 MHz)?
3. What factors influence the signal strength of these HF meteor scatter reflections?
4. Can an HF meteor scatter signal database be used to improve current propagation prediction models?

I encourage those who may find this topic of interest to visit the HamSCI website (www.hamsci.org) to learn more about the various activities and projects currently in work by the group. What I consider to be timely, HamSCI is being prominently featured in this month's August 2025 issue of *QST* magazine (14 pages in the printed version; 18 pages in the digital version).

For a complete description of the August and December Meteor Scatter events described in this article, including detailed guidelines and rules regarding participation, please visit the specific HamSCI website devoted specifically to the Meteor Scatter QSO Party (https://hamsci.org/msqp).

This is a great opportunity to actively contribute to a citizen science effort, learn something about an interesting digital mode and, hopefully, have some fun (ideally, very early in the morning!).

(Security from page one)

One of the biggest security mistakes people make is **reusing passwords**. We know it's tempting – remembering dozens of complex passwords is a pain. But here's the thing: if a hacker gets into one of your accounts because of a data breach (which happens more often than you think), and you've used that same password for your email, banking, and social media, they now have the keys to your entire digital kingdom. So, each account should have its own unique, strong password. This way, if one account is compromised, the damage is limited.

Then there's the unsung hero of password management: the **password manager**. If the thought of remembering dozens of unique, complex passwords makes your head spin, a password manager is your lifesaver. These secure apps lock and store all your passwords behind a single master password. You only need to remember that single, strong master password, and the manager fills in the others for you. Many options like LastPass, 1Password, plus those built into your phone or PC offer top-notch security features, seamless syncing across devices, and even tools to generate passwords. Imagine your password manager as a super organized, secure keychain for all your online accounts. It not only keeps your credentials safe but also makes logging in a breeze, encouraging you to use stronger, unique passwords without the hassle of memorization. Embrace the password manager – it's a game-changer for your online security.

TAG Activity Report for July 2025

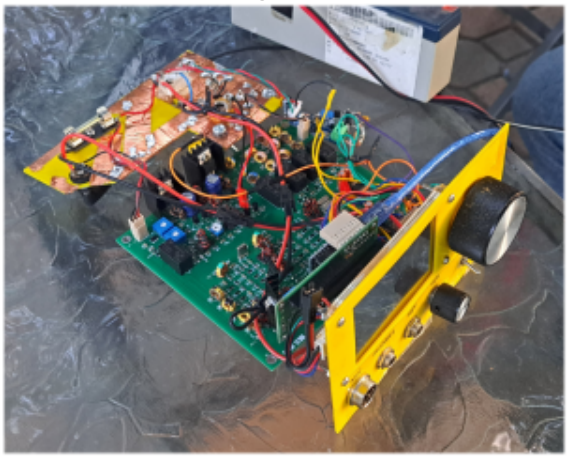
Dick Palmer's wife made for us "snicker doodles". For most of us, it was our first experience. Very chewy, and a bit like a cookie that is candy.

Walter is very fond of a CocaCola product that was discontinued. It was called Coffee-Coke and everyone he knew that tried it loved it. So in an attempt to recreate the experience he brought canned coffee and several cans of coke. I don't think there were very many converts. Harish brought some delicious Apple Strudle Bites from Sprouts. These were consumed in the premeeting when the discussion was mostly about buying a referbed computer. The consensus seemed to be it's quite a good deal and the place to get it is Micro Center in Tustin.

The Theme was "interesting surplus; gift or junk you got for nearly nothing." **Bill Webb** brought these two things. . .

On the left is a selenium cell light meter which he inherited as a memento of the olden days when anything that can be measured must be associated with a standard traceable to the Bureau of Standards. On the right a magnifying glass and holder. I believe these were called eye loops.

Dick Palmer brought this transceiver which a ham friend gave him.



It is SSB and CW and in receive, broadcast band AM to 30 MHz ham band. It's called a UBITX-V6

Larry McDavid and Bill Webb have been working together to make a holder for the Kenwood TH-D75. Here it is in Larry's Toyota Camry. They estimate 17 revisions before they were happy with it. One interesting engineering decision was to make the bar the microphone hangs on screwed in place rather than part of the case itself. That way it can be replaced if broken. It can't help but be fragile. The key feature of this HT holder is the ability to slide the HT into the holder while Speaker/Microphone and dc power cables are plugged into the right side of the HT.

Harish talked about Kindle and one of his languages Kannada.

Harish also talked about his 17 foot telescoping antenna.

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ನಱಿಯಲುಮಾರ್ಪರಾ ನಾಡವರ್ಗಳ್
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ಕಾವ್ಯಪ್ರಯೋಗ ಪರಿಣತಮತಿಗಳ್

Bill led a discussion on antenna analyzers and how much fun they are. NanoVNA is the one to buy apparently.

Devious Pythagorean Cup

Bill always brings an interesting toy he made on his 3D printer. This day it was a Pythagorean cup. Hidden within the thickness of the cup is a syphon which spills the wine if you are greedy and fill the bowl to the brim.

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