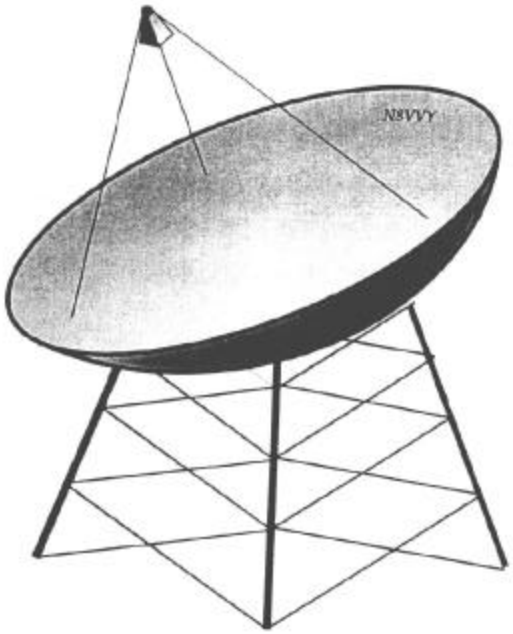
Meeting at the MCL Cafeteria in Kettering, Fri 27 Sept.

Sept-
2013

ANOMALOUS PROPAGATION

Newsletter: ***The Midwest VHF/UHF Society***



Editors:
Gerd Schrick, WB8IFM
4741 Harlou Drive
Dayton, OH 454 32
(937) 253-3993
WB8IFM@ARRL.net

Steve Coy, K8UD
3350 Maplewood Dr.
Beavercreek, OH 45434
(937) 426-6085
K8UD@ARRL.NET

Annual Society membership is $ 12.00. Please make checks payable to Gerd Schrick

MIDWEST VHF-UHF SOCIETY

Vol. 27 No. 7 www.mvus.org Sept. 2013

Beacon: 1296.079 **W8KSE** EM79ur Dayton, OH---- 2W to Big Wheel at 800' AGL.

Contents

Space Weather News for Sept. 14, 2013

QUIET SUN: Right in the middle of Solar Max, the sun has entered one of its deepest quiet spells in years. Flare activity has subsided and the sun's x-ray output has flatlined. This event highlights the unpredictability of the solar cycle. Visit http://spaceweather.com for updates and commentary.

Microwave Update Oct.18/19 Morehead KY
AMSAT Symposium Nov.1-3 Houston TX
Ft Wayne Hamfest Nov.16/17

Re-elected 8-24-2013
Pres. Tom Holmes, N8ZM
Vice Pres. Bob Mathews, K8TKQ
Secretary, Steve Coy, K8UD
Treasurer, Gerd Schrick, WB8IFM

The Midwest VHF/UHF Society has **noise sources** available in two frequency ranges: 50 MHz to 3 GHz, and 3 GHz to 11 GHz. Both versions are fully assembled and tested with ENR data provided. The lower frequency version is currently in stock at $50 including shipping in the USA. The 11 GHz version is $95, but delivery is about 8 weeks ARO. Contact N8ZM at **n8zm@mvus.org** for more details.

DE N8ZM 9-13 I am writing this from a hotel in Seattle as I am here attending the TAPR Digital Communications Conference. This is an annual event jointly sponsored by TAPR and the ARRL for the purpose of bringing together folks who have used digital technologies to do neat things with amateur radio. There are over 150 people in attendance from all over the world; all of them here to share their ideas and projects. Over the 2-1/2 days we will hear about APRS, how to support EMCOM activities; CODECs, numerous SDR products and projects, receiver testing, new networking schemes, and see some neat gadgets to make 'playing radio' more fun.

I have been attending the DCC for more than 10 years now, in part because I am obligated to report to the membership as the Treasurer (yes, they really do trust me with money). What always impresses me is the level of talent and energy among the attendees. There are some really smart folks here, and some of them are relatively young, as in college age, so I think there is some hope for the future of the hobby. It is also a chance to see many old friends, like John, N8UR, and Bruce, ND8I, who now live in Atlanta and Mobile, respectively. Both are doing well and told me they miss their friends in Dayton, but not the weather. I could go on for quite a while about the conference but Gerd is writing about the picnic and other MVUS stuff. If you weren't there you missed good food, good conversation, and some seriously good testing. After all, it is a tech session first and a party 2nd…well, that was the original intent over 10 years ago.

I have to remind you (though I shouldn't have to) that the Microwave Update Conference, MUD, is coming up October 17-20 at Morehead State University in Morehead, KY. Thursday afternoon is a picnic at the home of Jeff, WA3ZKR. Jeff's inventory of test equipment and microwave goodies is legendary, and some of it is for sale, so it is a party not to be missed. Then on Friday and Saturday will be presentations on microwave topics that will teach you more than you ever thought you would learn in any college course. As we are a VHF / UHF society, this is an important event to keeping up with what hams are doing at frequencies labeled microwave. And by th way, if you are planning to attend, please get with Jeff and offer your assistance with whatever tasks he may need to delegate. Jeff has done an outstanding job as the lead organizer and has always been supportive of MVUS projects, so the least we can do is reciprocate. I hope to see many of you there!

This is also the time of year when I start looking at the calendar so that I can set the dates for our next few meetings. As it turns out, the September meeting will be on the 27th, October on the 25th, November on the 22nd (which may prove to be the Friday BEFORE Thanksgiving), and December will be on the 27th. So mark your calendars.

See you on the 27th! Tom, N8ZM.

How is Lloyd NE8i doing? Rprt by Bruce, Wa8HGX (Sept 9 2013)

Lloyd, NE8i, well known microwave rover, suffered a stroke...

Well when I arrived today he was sitting on the edge of his bed. Even managed to shave himself early this morning, before going to dialysis.

Now he is not walking, legs are not working yet but making head way.. He can slide himself from the bed to the wheel chair. Still no kidney function but Dr's this morning told him they still think it possible that they will recover.. Will just have to wait and see.

All he wants to talk about now is, he and I doing big things on 24 Ghz and going to MUD in OCT.

We'll have to see how things progress.. But these are all good signs..

They are working him heavy on the physical therapy end of things and YEP he is complaining he is tired, I told him too bad.. there is no I will do it tomorrow , there is NO try he must do it NOW..

This and That 9-13

Watching TV. If all else fails, there is always a cooking channel (or two).

Einstein says: "When I was young, I found that the big toe always ends up making a hole in the sock. So I stopped wearing socks.

Noise. According to a Zagat survey of 15000 restaurants across the United States, noise was the second most common complaint by restaurant goers.

MAJOR FIREBALL EVENT (on Aug 28) A ~100 lb meteoroid traveling at 53,000 mph hit the atmosphere over the southeastern USA and exploded, producing sonic booms and a fireball as bright as a full Moon. Researchers are now scouring the countryside for fragments that could reveal the nature and origin of the meteoroid. http://spaceweather.com.

Applause. Whatever the impetus, screaming and shrieking has become the new applause for today's audiences at television programs, as well as at every musical performance this side of Handel's "Messiah". [D L Stewart]

Razor Blades. Sale of those have fallen by about 10%, the companies that sell them report, possibly because so many young hipsters wear beards. [Bloomberg Businessweek]

Hazardous Job. At least 10 workers have died in falls from communication towers this year. The accidents come amid one of the biggest building booms for cellphone towers, as wireless carriers work to roll out larger and faster cellular networks [The Wall Street Journal as per The Week 9-6-13]

Frau im Mond (1929). (Woman in the Moon) Director Fritz Lang's silent epic about a rocket journey to the moon has the first ever "2,2,1' count down for lift off. [National Geographic, Dec 2004]

Bicycles. There are 880,000 bicycles in Amsterdam, Netherlands's largest City, which has a population of 800,000. It's one of the world's most bike-friendly cities. Some streets have so many cyclists on them, there are bike traffic jams. [Time, July 2013]

Time Machines. "We all have our time machines. Those that take us back are memories. And those that carry us us forward are dreams. [H.G.Wells]

Scientist. The ideal scientist thinks like a poet and works like a bookkeeper.
[Biologist E.O. Wilson]

Something Strange. If you haven't found something strange during the day, it hasn't been much of a day. [Physicist John a. Weehler]

Selling a Fantasy. The lottery is a game where reason and logic are rendered obsolete, and hope and dreams are on sale. [The Week, Sept 6-13...source nautil.us]

MVUS Measurements and Annual Picnic By Gerd, WB8IFM

Sat 24 Aug. 2013 at Daun (N8ASB) and Karen (N8CSX) across the Wilmington, Oh Airport

The wx could not have been better. The 5-day forecast showed full sunshine and decent temperatures from day one. Well the only thing that didn't pan out was the 100% sun. There were clouds all day and the formations were so fantastic, I had to stop and take a few pictures!

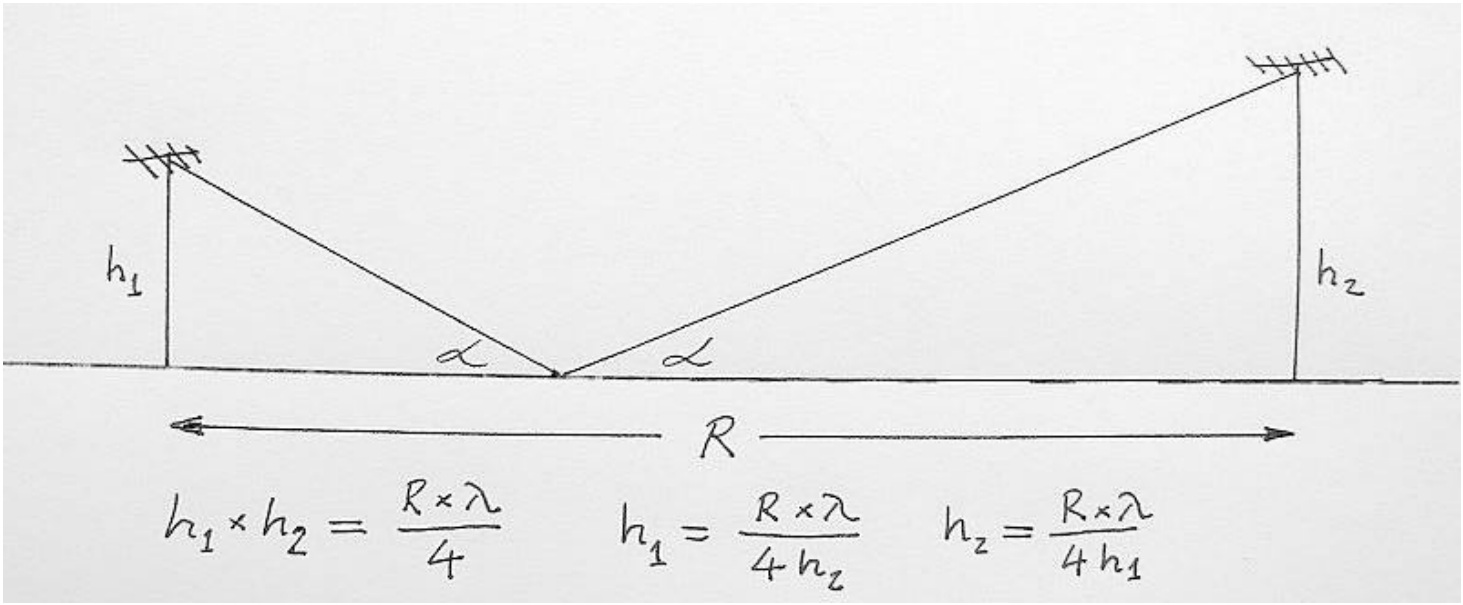
Attendance was very good (about 20) and there was good food and plenty of it.

Now to the measurements. Since a few hams had indicated an interest of having some antennas measured, I had started earlier in the week collecting the bits and pieces from our earlier measurement. I think we had not measured antennas for quite a number of years and some equipment got lost, was cannibalized or was not functional. Also for the UHF/TV antenna, that Tom, W9NBS, brought we really did not have a source or comparison (test) antenna.

In the in-between years Daun had gotten into measuring patterns of antennas and built up a stepper motor based rotating antenna mast and developed or modified a computer program to take data. As I recall that worked quite well and we reported and reproduced a number of patterns in our newsletters.

Well, Daun had similarly not been very active with those measurements and when we arrived about 10:30 he was busy getting the stepper motor to start turning. In the meantime. Steve, K8UD and I was setting up the good old "ground range" and each time I had to run to the car, conveniently parked close to the garage I had to run across the drive way to the large field that we were using for the tests. You see, Daun had his equipment in the garage and the antenna platform in the middle of the driveway a short distance out, so he would scream to get me or anybody else out of the way when he was checking on the position of his rotor.

Since our measurements were from 70cm and up, our range could be a lot shorter than it would be for 2m



measurements.

The formula for the ground reflection range gives you the pertinent dimensions of the range: the distance between the transmit and the receive antennas and the heights of these antennas required to face each other's main lobes.

The reflexion from the ground, which cannot be avoided is taking into account. In the formulas R is the range distance, h1 the height of the antennas to be compared and h2 is the height of the source antenna, and lambda is the wavelength. You can, of course use either feet or meters but do not intermix! Hi.

A few words about the range itself. Since obstacles in the vicinity of the range influence the measurements, the area around the range should be free of those. Especially detrimental are walls that are perpendicular to the antennas. In other words, any building should be in the order of 10 wavelengths away from the range and building walls with the broadside to the antennas should be further away yet.

This time we selected the range for 70cm at 62'; that placed the Tx antenna at 4.2' above ground, and the test and comparison antennas were both at 10'. Unfortunately this range was at the measuring end very close to the house and garage and created problems with reflections.

Previous measurements had been made some distance away from the house with the equipment on a heavy table under a canopy. The canopy could not be located and a good table was also not available.

Eventually Daun got his rotor cooperating with the program and the computer, a 70 cm test antenna was mounted and a pattern run performed. The pattern was hard to interpret, looked kind of funny and trying to make adjustments the computer crashed. Daun was using two HP network analyzers: the HP 8753 and the HP 8720 (goes up to 20 GHz) connected to a new laptop. ***)**

So we hurried to get our ground range going. The long feed cable was composed of two shorter cables and Daun found that the connection created an unacceptable impedance bump. So that cable was substituted. Then one of the measuring cables was bad, but fortunately we had another one that was OK. Lastly we found that a comparison antenna was not calibrated (or the numbers on the boom (where they are normally marked had faded. And since it was getting late, and some guys were already leaving, we stopped the antenna measuring part.

There were other measurements: Tom, N8ZM had brought his Agilent N9912A Field Fox combination spectrum / network analyzer. There was also the club's HP 8935 service monitor, which Joe Muchnij, N8QOD and Tom Stauffer, W9NBS, have shared custody of. This monitor was used to check out Mark, KB8ZR's 902/1296 transverter so that Bob, K8TKQ, could use it to build his VHF rover station. Bob had also put a 220 module put in his 736. Bob, our vice pres. Is a very avid VHF/ microwave enthusiast, he is blind, but with the help of xyl Carolyn, herself a ham, N8JQR, and his friends he keeps his station on the air!

The picnic was super. There was such a variety of food, you couldn't even think of checking it all out. Tom (N8ZM) and Barbara (N8EYW) did the shopping, drinks, meats etc and everybody else brought some side dish and, of course, there was Marilyn's, xyl of Red, W8ULC, birthday cake! Tom did a good job, as usual, grilling the brats and burgers and most of us went outside to the large deck alongside the house, as the weather was just superb. Also from the deck we had a good view of the Airport and the last two thirds of the runway. There wasn't much activity. We did see a seaplane (wheels strapped on) maneuver on the ground. Then we did see two small planes taking off one after another within a couple of 100'. Thinking they might perform some maneuvers we kept watching. But nothing happened, guess they just liked companionship and they disappeared in the distance.

About more measurements: last thing I remember was, Daun trying to figure out a bank of cavities forming some kind of filter/duplexer. Matt, K7DN, brought these in. They are intended for a repeater he plans to put up on one of his new planned towers. The frequency was adjusted but they need to be connected differently.

One by one the party melted away and at around 5Pm we also packed up, rolled up the faithful banner at the entrance and headed for home. Steve, K8UD, and I had come together and we stopped at a fruit farm on the way back. While there we made it across the street to take a closer look at a corn field. With Steve in the picture and his outstretched arm, you get a feeling how tall the Ohio corn is this year. We estimated the height at around 12 feet.

***)**Daun later commented: I'm testing a theory on what was wrong with the antenna positioner. I'm thinking that it was because my new laptop doesn't have a serial port, and using a USB to serial adapter was causing the problem. I have seen cases in the past where that's been the culprit, especially when the data is not just ASCII. ????

Attendance 24 Aug 2013 MVUS Picnic & Measurements

Name	Call	E-mail	
Gerd	WB8IFM	Call@ARRL.net	
Steve	K8UD	call@arrl.net	
Tom	W9NBS		
Joe	N8QOD	call@arrl.net	
Tom	N8ZM	call@MVUS.org	
Daun	N8ASB	Daun@Yeagley.net	
Jim	WB8VSU	call@arrl.net	
Mike	K8RKO	Msuhar@WOH.rr.com	
Gerry	K8GDT	Gtirch@gmail.com	
Lee	KD0QQM	Axel.ASDF@gmail.com	New Ham
Art	WA8RMC	TowsLee1@EE.net	New Member
Red/Marilyn	W8ULC		
Randy	WB8ART	RanMid@gmail.com	
Bob/Carolyn	K8TQK/N8VQR	K8TQK@arrl.net	
Mike	WA8HNS	MikeG41@Roadrunner.com	
Mark	KB8ZR	call@arrl.net	
Matt	K7DN	call@D-Star.US	

Tom, N8ZM and Daun, N8ASB doing their thing

Beautiful Country Setting.... FB WX

Tom, N8ZM, master chef

Matt, K7ND dreaming of his new towers.

Lee, KD0QQM and Joe, N8QOD

Daun Testing Cavities for Matt's repeater

MVUS 8-24-2013

What's All This RIP (Rest In Pease) Stuff, Anyhow?

Paul Rako,
Contributing Editor Electronic Design

Mon, 2013-6-17

It's the second anniversary of Bob Pease's tragic death, just a week after analog great Jim Williams died. I think of Bob most every day. He mentored me and several others at National Semiconductor (now Texas Instruments). Bob always had time for his fellow engineers. If you called him up with a problem, he did not ask how many chips you were going to buy. He would ask what your source impedance was and what power supply rails you had to work with. He did not suffer fools, but if he saw that you had thought about the problem and tried to solve it yourself, he would give his time willingly.

Bob used to say, "A soldering iron is my Spice." So Texas Instruments application engineer Paul Grohe and I took him to lunch one day and presented him with a 200-W unit I found at the Electronic Flea Market *(Fig. 1)*. I still see companies implying you can use simulation to eliminate prototyping. Pease knew that Spice might reduce a spin or two, especially for inexperienced engineers, but nothing beats real hardware.

Bob also knew that love of analog crossed company boundaries. For example, he was friends with Linear Technology's Tim Regan, the amplifier applications manager *(Fig. 2)*. Jim Williams' wife, Siu, told me that Bob would often stop off at their home to show Jim some articles or clippings, or maybe to drop off some hardware or test equipment. Bob didn't care if you worked for a competitor, as long as you loved analog. Some folks get into analog because it will make them a lot of money. Bob was into analog because it is beautiful.

Alan Martin, a factory applications engineer at Texas Instruments, was Bob's friend. He snapped a picture of Bob's new office the day after he died *(Fig. 3)*. Note the Digi-Key magazine and the National Semiconductor Linear Applications Handbook on his desk. Bob would always be on the lookout for new information while being anchored in the traditions of analog design.

So rest in peace, my analog aficionado. Bob will be missed, but he will also be treasured. And he will serve as inspiration to the next batch of analog wizards to follow in his footsteps and stand on his mighty shoulders.

Paul Rako is a creative writer for Atmel corporate marketing. After attending GMI (now Kettering University) and the University of Michigan, he worked as an auto engineer in Detroit. He next moved to Silicon Valley to start an engineering consulting company. After his share of startups and contract work, he became an apps engineer at National Semiconductor and a marketing maven at Analog Devices. He also had a five-year stint at EDN magazine on the analog beat. He can be reached at paul.rako@gmail.com.

ISS "Firestation" to Explore the Tops of Thunderstorms **Sept. 10, 2013:**

We all know what comes out of the bottom of thunderstorms: bolts of lightning. Jagged columns of light plunge Earthward, heating the air to 50,000 degrees F, about five times hotter than the surface of the sun. Claps of thunder announce this process somewhere on Earth as often as 50 times a second.

Have you ever wondered though what is on top???

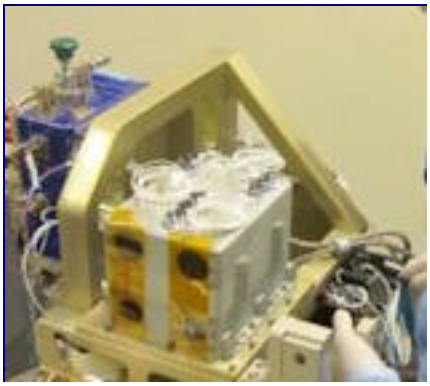
A new ScienceCast video explores the strange things coming from the tops of thunderstorms.In recent decades researchers have discovered some strange things happening in the cloud tops. High above ordinary lightning, exotic forms known as red sprites and blue elves shoot toward the heavens, cold cousins to the fiery bolts below. In some places jets of antimatter fly upwards, triggering the detectors on NASA's orbiting high-energy observatories. And as often as 500 times a day, Earth briefly mimics a supernova, producing a powerful blast of gamma-rays known as a Terrestrial Gamma-ray Flash or TGF.

No know knows exactly how these phenomena are related either to each other or to the lightning down below.

A new experiment called "Firestation" onboard the ISS aims to find out. Firestation is a package of sensors designed to explore the links between TGFs, ordinary lightning, and sprites.

“The space station's orbit will carry Firestation directly above thousands of active thunderstorms during the one-year lifetime of the experiment,” says principal investigator Doug Rowland at NASA’s Goddard Space Flight Center. "The ISS is perfect for this kind of research.”

Unlike previous experiments in upper atmospheric lightning, Firestation has the unique ability to observe thunderstorms at multiple wavelengths simultaneously. It can record the radio static from lightning, measure its optical glow (including the red and blue light of sprites and elves), and detect the gamma-rays and electrons associated with TGFs and antimatter events.



Firestation has radio, optical, and gamma-ray sensors. More

Rowland expects Firestation to observe up to 50 lightning strokes per day, at least one TGF every few hours, and a large TGF every couple of days. Such a firehose of multi-wavelength data will allow researchers to sort out cause-and-effect connections impossible to see in previous studies.

"There are several different types of lightning," Rowland says. "At the moment, we don't even know which type produces a gamma-ray flash." Firestation could solve that decades-old mystery in its first few weeks of operation. The thing that intrigues Rowland most about TGFs is their surprising energetics.

"Gamma-rays are thought to come from the most violent events in the cosmos like stars colliding or exploding," he points out. "What a surprise to find them shooting out of the cold upper atmosphere of our own planet."
Something up there is accelerating low-energy particles of air to nearly the speed of light, producing gamma-radiation and, sometimes, a cascade of antimatter. Rowland wants to find out what that strange, unknown "something" is. Firestation is poised to crack the mystery.

The experiment was delivered to the ISS on August 3, 2013, by the Japanese robotic cargo vessel "Kounotori-4." It has since been installed on the station's exterior by the station’s robotic arm. All of the sensors were checked out at the end of August and full-time science operations are slated to begin in early September 2013.

Credits:

Author: Dr. Tony Phillips |Production editor: Dr. Tony Phillips | Credit: Science@NASA