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

Listen for the **K9AYA Beacons** at EM79qk, 2W @ 10,368.000 MHz both are copied by K4TO daily. 1W @ 5,760.000 MHz

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Sorry this issue of your AP is late,  
we faced multiple problems this month,  
one (of course) computer related!  
Please Forgive us! "The Editors"  
MVUS Officers:

Pres. Tom Holmes, N8ZM,  
Vice Pres. Bob Mathews, K8TKQ  
Secretary, Steve Coy, K8UD  
Treasurer, Bulletin Editor, Gerd Schrick, WB8IFM

**DE N8ZM.** So a group of hams walk into a bar, but the 6-lander ducks. If you've met my friend Skipp at Hamvention, then you've already heard that joke. Skipp is a 6-lander, of course. And in the spirit of full disclosure, I had to hear that joke several times before I realized that it was a play on the word 'bar' as used in many bad jokes. What has that got to do with this newsletter column? Not a darn thing; I just was desperate for an opening line.

A couple of things to report this month. First, Joe, N8QOD, has agreed to organize the Hamvention balloon launch for 2015. He has been very helpful the last several years in helping me pull it together so I felt it was time for him to step up. And there are other reasons I asked him to do it as well which I will cover shortly. Thanks Joe!

Also, I am looking for someone to be the moderator of the VHF/Microwave forum at the big show. The task is really not that hard. Line up a few speakers who have something interesting to say, get the info about their talks to the Hamvention Forums chair, and then show up at the forum to introduce each speaker. If you attended the forum last year you know that I even minimized the public speaking part so that even the most timid amongst us would be comfortable. It went very smoothly last year except for a couple of guys who could not make the show at the last

minute but that just gave the rest a bit more time to talk. And every ham likes to talk, don't they? Anyway, I'll be around to advise so don't let it scare you. And you don't have to be here in Dayton to do it, well, except for Hamvention weekend and where else would you be then anyway?

Now the reason I am handing off these jobs is that I agreed, in a brief (?) fit of insanity to take on the job of Prize Chair for the aforementioned big show. This is not a task that allows one a lot of freedom during the show, hence the need for other folks to take on the above tasks. So please, someone, step up and help keep MVUS in the public eye by taking on the forum job.

In other news, our own Bob Mathews, K8TQK, was the featured speaker at the DARA meeting last week and he gave an excellent talk cum demonstration on VHF and microwave weak signal activity. Bob put in a couple of shameless plugs for MVUS too! I had at least two people come up to me afterwards to learn more about the subject and wanting to know how to get involved, so that was great. Bob has been making the rounds of many clubs in Ohio whose members are not normally heard on the weak signal frequencies.

Not much else to report for now, and anyway it's past my bedtime. See you on the 24<sup>th</sup>! de Tom, N8ZM

## **First Private Moon Mission to Launch on Chinese Rocket Today, Oct 23**

By Mike Wall, Senior Writer

The first privately funded mission to the moon is scheduled to blast off Thursday (Oct. 23), hitching a ride on a Chinese Long March rocket.

The **4M mission**, a project developed by Luxembourg-based company LuxSpace, will piggyback on a Chinese moon flyby unofficially dubbed Chang'e 5-T1, which aims to test out technology for a future lunar sample-return mission. Liftoff is set for 1:59 p.m. EDT (1759 GMT) Thursday from China's Xichang Satellite Launch Center.

If all goes according to plan, the Chang'e 5-T1 spacecraft will zoom around the moon and back toward Earth, ultimately sending a test capsule barreling into our planet's atmosphere on Oct. 31. The main purpose is to try out tech that could get moon dirt and rocks to Earth — the goal of China's Chang'e 5 mission, currently slated to blast off in 2017.

**Ham Radio on Board.** This is a radio amateur beacon (piggyback), which will allow the sending of messages and at the same time test a new approach to locate the spacecraft through inverse triangulation. A 1W 2m TX and a vertical antenna sends telemetry data via the WJSJT (K1JT) coding method, Receptions are reported, as of 10-24, from stations in Australia, Europe and South America. The mission will last 9 days with a return to earth and a soft? landing. [Ed.]

## This and That 10-14

**Shortwave radio.** “This radio I'm holding is absolutely essential. It's about 20 years old. The letters are worn off the buttons, but I know where Voice of America and the BBC are. ... The radio and I have been in some scrapes, we've always made it back....someday, when I hit the “on” button, the screen won't come to life, and it'll break my heart.  
[Scott Pelly, Reporter]

**Amp.** Makes signals louder, QRMs nearby hams, and causes banging on the front door! And.....  
“CPU” a device not found in “real radios”.  
[Jerry Spring, VE6CNU]

**LEDs.** After Siemens did it last year, Philips is now splitting in two: It is spinning off its iconic lighting unit- 123 years after making its first incandescent lightbulb. Now this unit will produce LEDs, consumer electronics plus health equipment. Analysts predict General Electric could soon follow suit.  
[Bloomberg and “The Week”]

**Economics.** Want to keep up with the latest in “Economics”: Wikipedia lists some 115 scholastic journals for that purpose. Universities have already split; there is a school of Economics and a School of Business.

**Hyper Inflation.** There is a summary of a warning by Art Cashin that the US should avoid the Weimar mistake, that hyper inflation in Germany after WW1. Initiated by the Weimar Republic it actually made things worse. Experts still have a problem explaining it. Cashin says, not even one man in a million is able to figure it out.  
[Rod Dreher 13 Oct 2011]

**Burning Books.** “There are worse crimes than burning books. One of them is not reading them. “  
[Poet Joseph Brodsky]

**Horses.** If I had asked people what they wanted, they would have said faster horses. - [Henry Ford ]

**Texas.** This state is BIG, though not as big as Alaska. It can take a couple of days' hard travel just to get out of it.  
[Molly Ivins]

**Hanlon's Razor:** Never attribute to malice that which is adequately explained by stupidity.  
[from "I just heard of this", submitted by Dan, K9RA]

**Confucius:** He said: "Be not ashamed of mistakes and thus make them crimes," "It does not matter how slowly you go so long as you do not stop," and "Wheresoever you go, go with all your heart."  
[ quoted by Garrison Keiller in Writer's Almanach for 9-28]

**Global Warming.** Our eyes are glued to the smart phones and our attention spans scattered by clickbait... we stood by helplessly for more than two decades as the climate crisis morphed from a “grandchildren” problem to a “banging-down-the-door” problem.  
[Naomi Klein in “A Peoples Shock.”]

**See, Ma, No Hands.** Looking for a crimp tool? You find advertised: pneumatic crimpers, hydraulic crimpers and new: battery powered crimpers. What happened to the plain old hand powered crimper?

**You are not alone.** “A hundred times a day I remind myself that my inner and outer lives are based on the labors of other people, living and dead, and that I must exert myself in order to give in the same measure as I have received and am still receiving.”  
[Einstein, 1930]

## The Good Old Days.

During your busy day you constantly have to turn things on and off, have to open and close doors. This involves switches, handles, and to-day a lot of pushbuttons.

In the old days the simple electrical switch required to be flipped up or down or left to right or the other way. I don't think there was any rule which way. I preferred to turn the switch from the up (off) position down into the on position. In any case, you usually could tell almost immediately that the desired effect was there. A light would come on, a radio started playing and so on. There were delayed actions, when filaments needed to be warmed up for instance. However, when after a few seconds nothing happened you would flip the switch off and on again. Still no action, you would give the radio a little whack! Still no action. A power outage might be suspected. Of course, that would take checking a few more lights or gadgets around the house.

Well the invention of the pushbutton sure changed this simple culture. Just as we are talking of the stone age, the bronze age and so on, our age eventually will be referred to as the "pushbutton age". Already, if you observe your fellow men, you will notice that the thumbs, which are opposite of the fingers and meant by nature to grab and hold small items securely, are nowadays used for pushing buttons on small portable toys which sometimes can also serve as a telephone. I am too old to learn what they call these things; there are at least 50 different types.

Since they also cost a bundle, they can solve an awful lot of problems, or cause them depending on how you look at them. Just don't mix them up with ham radio. WB8IFM, Gerd Schrick.

## Anomalous Propagation.

Wireless Navy Experiments after the War into the 1950s:

Wireless transmission was commonplace by the post-World War II era, but long-distance high-frequency transmissions relied upon refractions of the radio waves by earth's ionosphere. Solar flares or geomagnetic storms seriously disrupted those transmissions, and were difficult to predict. The ability to bounce radio waves off a sitting target like the moon—or, later, an artificial satellite—would make it possible to maintain wireless communications even during solar flares or geomagnetic storms. There was also interest in using such a system to track radio signals from the Soviet Union and Eastern Europe, at a time when diplomatic relations with the US were becoming rather frosty. The Navy's powerful radar receivers had already been picking up stray radio signals from Europe and Japan during World War II—a phenomenon referred to as "**anomalous propagation.**"

[Navy]

## Anti Matter By Garrison Keiller, 8-2-2014

Physicists began speculating in the late 19th century that there may exist particles and matter that are exact opposites of the matter that surrounds us, mirror-image anti-atoms and perhaps even whole anti-solar systems where matter and antimatter might meet and annihilate one another. On this day in 1932, American physicist [Carl Anderson](#) discovered the first physical evidence that antimatter was more than just an idea.

Anderson was photographing and tracking the passage of cosmic rays through a cloud chamber, a cylindrical container filled with dense water vapor, lit from the outside, and built with a viewing window for observers. When individual particles passed through the sides of the container and into the saturated air, they would leave spiderweb tracks of condensation, like the vapor trails of miniscule airplanes, each type of particle forming a uniquely shaped trail. Anderson noticed a curious pattern — a trail like that of an electron, with an exactly identical, but opposite curve — an electron's mirror image and evidence of an anti-electron. Anderson named the antimatter particle the positron and won a Nobel Prize for his discovery four years later.

## WIFI via the Moon May 27, 2014 NASA

NASA and MIT demonstrate how wireless broadband connection works in space

Checking your Facebook status or sending an Instagram photo from space could become reality, as a group of researchers from MIT and NASA believe they have come up with a way of establishing a decent wireless connection between Earth and the Moon.

The two organizations have demonstrated for the first time that data communication technology can provide people in space, with the same sort of INTERNET connectivity that we enjoy at home. It would not take hours to send a simple message either, as the team says it is possible to process large data transfers and even high definition video streaming.

*"Communicating at high data rates from Earth to the moon with laser beams is challenging because of the 400,000-kilometer distance spreading out the light beam,"* Mark Stevens of MIT Lincoln Laboratory said in a press release published by the [Optical Society](#).

*"It's doubly difficult going through the atmosphere, because turbulence can bend light, causing rapid fading or dropouts of the signal at the receiver."*

Four separate telescopes are used from a ground terminal in New Mexico, which transmits the signal to the moon. A laser transmitter that can send information as coded pulses of invisible infrared light feeds into each of the telescopes.

The distance between Earth and the Moon is vast - just under 400 thousand kilometers. However, the team has successfully managed to transfer data at a rate of 19.44 megabytes per second and impressively has managed to download data at a rate of 622Mbps.

Due to the amount of turbulence in the air, each of the four telescopes, which are used beam the connection to the moon, send their signals through different paths. This will mean they all experience different bending effects from the atmosphere, but increases the chance that one of the signals will make contact with the receiver, which is connected to a satellite currently orbiting the moon.

The satellite also has a telescope, which collects the laser beam and focuses it into an optical fiber. A photo detector turns the pulses of light into electrical pulses, and from there they are converted into data.

It may sound like a lottery, given all the difficulties to get the signal to the moon and in fact less than one billionth of a watt from a 40-watt signal is actually received by the satellite. Nevertheless, Stevens says that this is ten times the amount needed in order to set up a reliable connection, so sending a selfie from the moon in seconds may become a reality, sooner rather than later.

**Comments.** [Ed.] Very interesting! I am just back from this year's AMSAT symposium in Baltimore. Similar concepts were floated for future AMSAT satellites. And now an AMSAT bulletin came out which requests "ideas" for future AMSAT satellites. This request is too "wordy" to reproduce here, but I am sure, if interested, you can find it on the web or get in touch with an AMSAT guy! Of course, the no 1 condition/limitation you have to start with is the size/shape/weight of the satellite. It's got to be a "cube-sat" or a multiple there-of. Presently there are cube-sat sextuplets.

Now here is my "idea" to this request: The minute size of the satellite limits and determines the size of the antennas as well as the amount of power that can be harvested from the sun. This requires microwaves or even millimeter wave frequencies. The gain may not be quite as what can be had with lasers and lens type antennas, but depending on the height of the orbit it maybe workable. The fact that both light and mm waves are influenced by clouds covers would make such a satellite suitable for propagation research. AMSAT is interested in this because of the benefit of such a scientific / educational mission. For the up-link I suggest 24GHZ and for the downlink 10 GHz. To get the satellite into a higher orbit I suggest an on board ion engine as proposed at the Symposium.

## October 2014 MAD Report de Lloyd EN 73

Saturday started out sunny, a beautiful Fall day with lot's of color here. Weather-forecast only a few minor showers. TV signals showed no real enhancement. So I started out on my 2-hour journey to hill EN82em. From there any of the rover stops are at least a one hour drive. Lake Michigan is a two hour drive.

I called cq on 144.260...nothing. When I got to Howell the sky was dark, and heavy rain. All the way to GP hill. Nothing on 2m. Tried 10 GHz from inside the rover: cq rs, hoping for some rain scatter. But nothing. We had agreed if the weather was bad, we would not try. Next April and November we will try only if the wx is really nice! From now to April there is activity only from the house.

I made a few cellphone calls. Yep, there was rain, concern about lightning. So I disconnected everything. Wound up driving to a 10 GHz OP (nameless) worked on his set-up. Did not get a chance to try out my latest fixes.

There were, however, beautiful fall colors to be seen, that alone was worth the drive! Lloyd, NE8i, Rover.

### 10 GHz Beacon from EN73

I've been working on my 10 GHz beacon. The shake-down from the house, turned on sporadically as I work on details and do testing. When everything works it will be moved to a more permanent location.

**Currently:** Freq: 10,368.350 MHz QTH: EN73mv, Farwell, MI. Power: 200mW, Antenna: 2ft. Dish-Shepards crook feed. Aimed at best horizon South-East. Height 10 Ft. Call: NE8i/bcn

All this is temporary. Changes, plans in jello! This is a DB6NT beacon. You can order them with a US band x-tal, which takes longer and costs a lot more. If I get ambitious, I will get the 1 watt amplifier working (Qualcom surplus)

### Re Batteries in Electric Vehicles (EVs)

“Are we there yet?”

“...One would think that about as much electricity could be stored in a battery as oil can be stored in a tank, because the same kind of forces are being manipulated. Unfortunately reliable lead batteries are very heavy because they use lead from the heavy end of the periodic table. They provide only about as much energy as would result from an equal number of atoms at the light end of the series. Clearly what is needed is a good storage battery in which lithium is oxidized and reduced instead of lead.”

This from the Scientific American written in 1971.

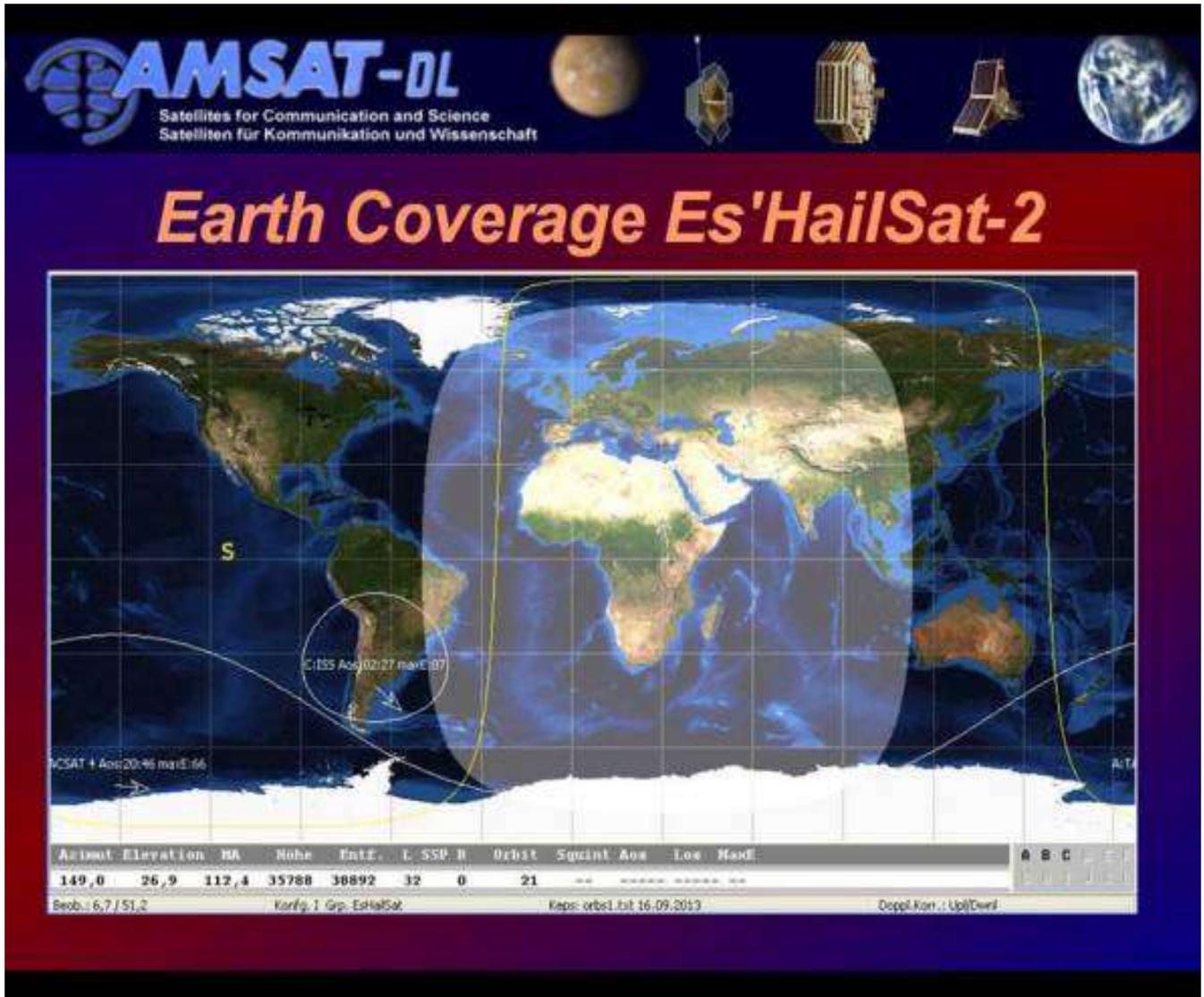
To-days electric car batteries, made with lithium, are **five times lighter** than their lead equivalents and therefore win hands down in competing for the electric vehicle (EV) use.

{Ed.]

## Qatari Es'hail 2 Satellite will Include AMSAT-DL Phase 4 Amateur Radio Transponders

Gunter's Space Page has reported that the Es'hail 2 communications satellite will carry analog and digital Amateur Radio transponders. The new satellite, which will be operated by Es'hailSat, the Qatar Satellite Company, will be in a geostationary orbit, positioned at the 26° East "hotspot" position for TV broadcasting to the Middle East and North Africa. Launch is planned for **late 2016**.

Es'hail 2 will provide the first Amateur Radio geostationary communication capability linking Brazil and India. It will carry two AMSAT-DL-designed Phase 4 Amateur Radio transponders, consisting of a 250 kHz linear analog transponder and an experimental digital modulation transponder with an 8 MHz bandwidth. Uplinks will be in the 2.400-2.450 GHz range, with downlinks in the 10.450-10.500 GHz Amateur-Satellite Service allocation. Both transponders will be equipped with antennas capable of providing full coverage over about one-third of Earth's surface. The Qatar Amateur Radio Society and Qatar Satellite Company are cooperating on the Amateur Radio project. AMSAT-DL is providing technical support. -- Thanks to Gunter's Space Page via AMSAT News Service [ARRL Letter fr Sept]



## Impressions from our Amsat 2014 Space Symposium Trip

By Joe Muchnij, N8QOD

Gerd, WB8IFM, Steve, K8UD, and I drove to Baltimore for the Amsat Symposium. Before checking into the hotel we stopped at the nearby National Electronics Museum; it was after normal hours, but while examining the outdoor antenna exhibits, we were approached by a local ham who said they were about to have a ham club meeting, and invited us to browse the inside exhibits. The museum is constantly adding displays, and coincidentally, one of the newest was about Amsat.

Once the symposium began, I found a number of presentations particularly interesting and worth highlighting:

Foremost was a talk (and video) presented by Col. Charles E. McGee who is 95 years young, and one of the Tuskegee Airmen flying fighter aircraft in World War II. After that war, he continued in the Air Force, flew in Korea, Vietnam, and later.

In an informal discussion I found him a very gentle and unassuming person, and we shared typical fighter pilot vignettes. We found several personal connections: we both flew tactical reconnaissance in the 1960s, both attended the Tuskegee Airmen reunion at Selfridge ANGB, and we both had assignments to the same remote airbase in Italy (at different times).

Howie DeFelice AB2S described development of a 'Pocketcube' satellite measuring 5cm x 5cm x 7.5cm for less than \$300 (the original budget called for \$50). They had a very constrained schedule and completed design & development in two months--it was launched last fall into a 700km sun synchronous orbit and became MO-76. The project was totally open-source and all information is available on a Dropbox account linked to their website, <http://www.50dollarsat.info>.

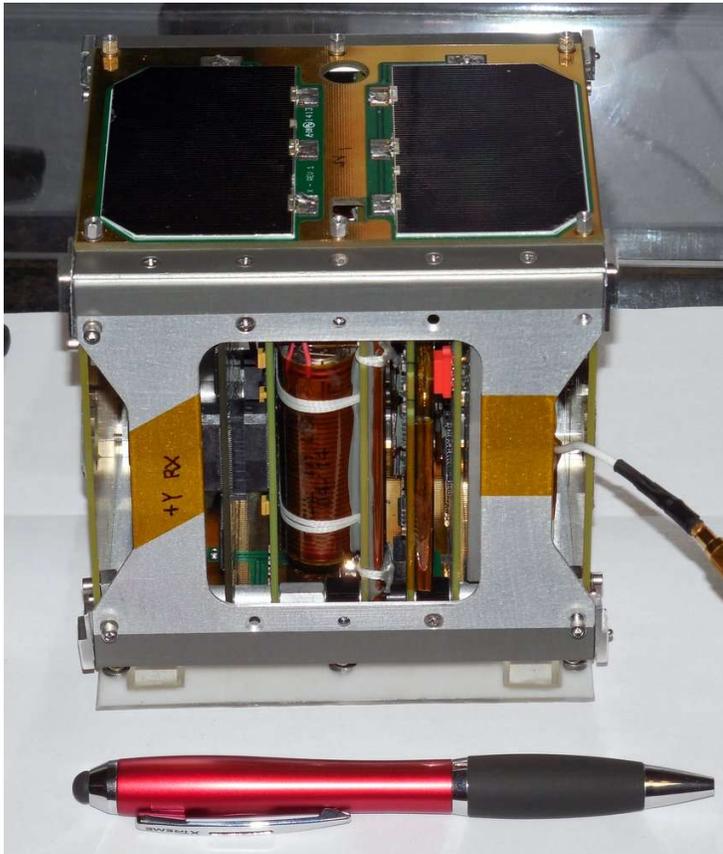
At the Saturday evening banquet Jan King, W3GEY, >>>> reminisced about building AO-7 in his basement, and its launch on an Atlas rocket 40 years ago--it's the oldest satellite of any type still functioning in orbit. He then went on to characterize the VHF/UHF ham bands as noisy and unfriendly to space communications

because our spectrum is shared with military radio navigation systems and unlicensed consumer equipment. He convincingly argued we should have future satellites use our quiet bands at 24GHz and higher where, as the primary users, we have some protection from interferences.



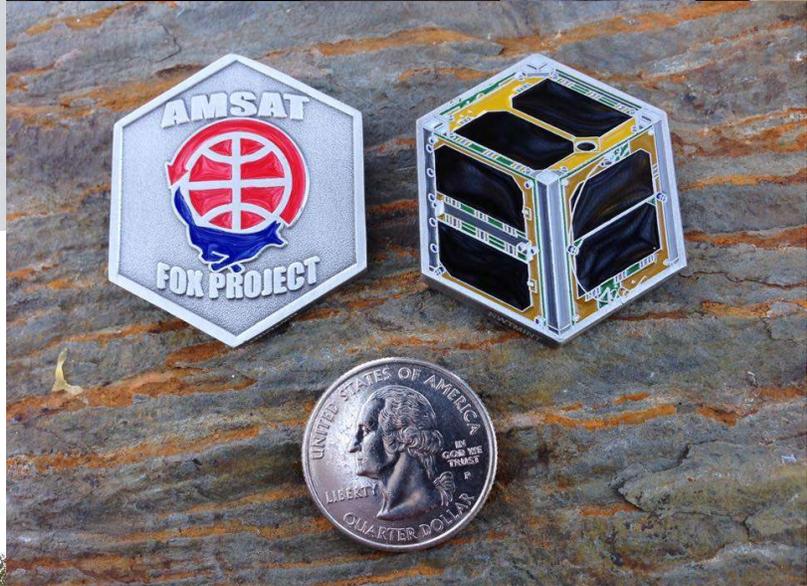
Photo: Courtesy of Keith, KB1SF.

# AMSAT Symposium Baltimore, Oct 17/18 2014



Full model of FOX – 1A (Courtesy KB1SF)  
Fox 1A team members (Top right)  
Burns Fisher, W2BF (L),  
Patrick Stoddard, WD9EWK (R) (Courtesy N0JY)

Below: Nerd Alert! Here are a few ops  
talking on AO-73 Sat. 11 Oct (Courtesy KB1SF)



## AMSAT "Challenge Coin"

Photo above shows Actual size, Front and back  
\$100 donation or more to the FOX project.  
(Courtesy AMSAT)

