

Meeting: Fri 25th at the MCL Cafeteria in Kettering

Jan 2013

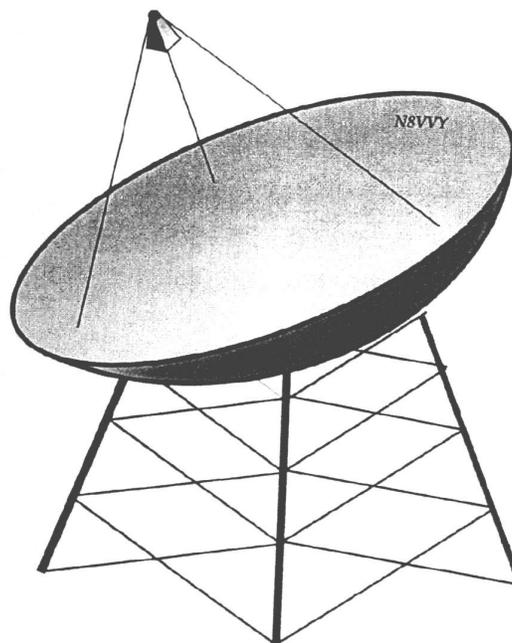
ANOMALOUS PROPAGATION

Newsletter: *The Midwest VHF/UHF Society*

Editors:

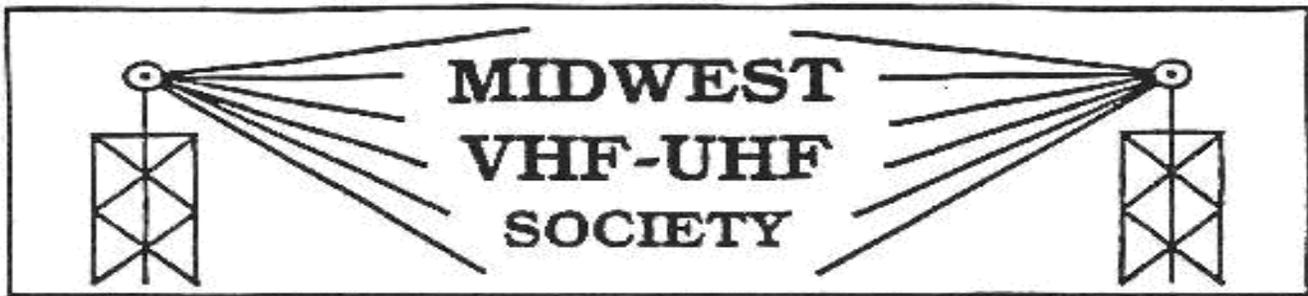
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Annual Society membership is \$ 12.00. Please
make checks payable to Gerd Schrick



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

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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 \$90, but delivery is about 8 weeks ARO. Contact N8ZM at n8zm@mvus.org for more details.

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DE N8ZM

Time sure flies when you're having fun...and to much eggnog. So here we are again and Gerd is after me for my column. Which means that the meeting is coming up as well, on Friday Jan 25th. You've been warned.

I've been working on a couple of projects (and probably have a couple too many in the fire, as usual), one of which is the balloon launch for Hamvention. There will be a live SSTV downlink from the balloon and the project is to stream that video over the wired network at HARA. I have access to the network; I just need to figure out how to get from the receiver's audio output to the net with the displayed screen shot. The first part I believe is fairly easy since there is SSTV software that works with sound cards to put the image on the computer screen. The trick is to get that from the screen to the network port. I have been told that there is software to do just that in a streaming sort of way. IF so, that would be really cool. If you guys have any favorites for either software package or other tips, please let me know. It isn't that long until May!

Back before Thanksgiving, there was talk of having a tech session for tuning up whatever you have that needs attention. I'm game to pull it together if you are interested. Just let me know what your needs are so I can plan. We can talk about a date at the meeting.

There has been a surge of interest in the noise sources recently, especially the microwave model, so I will be ordering some more diodes from Noise/Com soon. If you are interested in one, drop me a note soon so that I can order enough diodes for this next batch. Don't wait, the folks who have expressed an interest are chomping at the bit, as they say.

I am still looking for antenna ideas for the e2304 beacon. Recently Bob, K8TQK, mentioned that he heard of one beacon that used 4-three element yagi's, pointed at 90 degree headings to give omnidirectional coverage. Given that the beamwidth of a 3 element beam is pretty wide, that could work quite well. So now I have to scratch my less than hairy head about how to build a 4 way power divider. It's always something! Maybe some careful matching would let me get away with simply paralleling them. I should be so lucky.

And kudos to Mike, W8RKO, for once again putting W8KSE on the air for the November Frequency Measuring Test. For 40m the early reports, we were heard quite well over most of the country. Thanks Mike!

See you Friday! Tom, N8ZM

In Eigener Sache (Re "my own business!") By Gerd, WB8IFM

I don't know for how many years I have been the principal contributor and editor of our newsletter, and with other equally challenging obligations my personnel projects surely have suffered. Now add to this my age and the almost daily reminders that we are all mortals, it becomes urgent that younger folks consider picking up some of the burden putting out our "beloved" Anomalous Propagation 9 times a year.. What I visualize is splitting up the pages into distinct subject matters: like page 3 "the "Presidents page". Here is the line-up:

- 1) Contests and Rovers ---Lloyd, NE8i
- 2) Beacons, Repeaters & Transponders Bob, K8TKQ
- 3) Newcomers and Basics **Everybody**
- 4) Antennas, Equipment **Everybody**
- 5) This and That, Gerd, WB8iFM

Any Volunteers, nominations and, of course, other suggestions to this idea are welcome.

This and That 1-13

Electrical Votes. - It was Yogi Berra who supposedly said, "It's very hard to predict things, especially about the future." But then he also said, "I never really said all the things I said." He even talked about politics and the presidency: "You know Texas has a lot of electrical votes."
[Richard Reeves]

Cute Photos. ...We've had a woeful lack of progress in energy, transportation, agriculture, and medicine. We "can now use our phones to send cute kitten photos around the world," but our ability to protect ourselves from natural disasters... has barely increased.
[Garry Kasparow and Peter Thiel.]

Talk to Your Doctor. Direct-to-consumer advertising is extremely lucrative for both pharmaceutical companies and the media outlets that carry the ads. *It is legal only in the US and in New Zealand.* Research indicates doctors typically acquiesce to patients who request drugs they have seen advertised. [Bob Morgan, VE3OQM, 2008]

Failure. Everything that fails brings you closer to the one that works. [J K Rowling on Charly Rose]

Good Advice. Do walk everyday except the Day you die. [Dr. Nancy Snyderman, NBC]

Sauna Vision. In a sauna you see people as God made them and McDonald gave them shape.

Presidential Limousine. President Truman's limousine was a modified 1950 Lincoln Cosmopolitan, 20 feet long and with a V8 engine. It had two heaters, 2 radios and 4 cigarette lighters. Two seats were collapsible and the windows were hydraulically operated.

[Notes from a visit to the Truman Library in Independence MO, Gerd, WB8IFM]

Buckingham Palace. The English Queen's huge palace has numerous lights. Many being huge chandeliers with maybe 100 or more bulbs. A crew of 30 takes care of changing the burned out bulbs. [PBS. The Queen's Palaces]

Doubling Kiwi's Bandwidth. Web-hosting magnate Kim Dotcom promised to give all New Zealanders free WiFi with the money he'll earn from suing Hollywood. Dotcom, born in Germany as Kim Schmitz, plans to run a fiber-optics cable across the Pacific from New Zealand to the US, doubling Kiwis' bandwidth.

[The Week, Nov.16,

2012]

Arithmetic. To the surprise of pundits, numbers continue to be the best system for determining which of two things is larger. [Randal Munroe, Cartoonist]

Be Happy. For every minute you are angry, you loose 60 seconds of happiness. [Ralph Waldo Emerson]

Insurance...is all about betting against negative consequences and the insurance business model is unique in that profits depend upon goods NOT provided. [Dr Jonathan Kellerman]

Driving in India. Vehicles push past each other, swerving, braking and constantly honking. Most of the cars have back-up songs, announcing that they are in reverse. Many of these are electrical ditties of Christmas songs. Think of a ring tone version of Silent Night. The Titanic theme is also pretty popular. [Dani Hill]

Propagation Experiment. Sacks with potatoes were put on the seats of an airliner to check out the field of Wifi on board (2.4 GHz). The potatoes duplicate well enough the bodies of humans for this experiment. No results were mentioned. [NBC News w. Brian Williams, Dec 20-12]

First Electricity. Massive batteries were installed on the White House grounds with enough power to shock the president when he touched a light switch. He and his family decided to leave touching the power switches to the servants, and if they weren't around, why, they slept with the lights on.

[Len Schiefer in Electronic Products, Nov. 2012]]

A New “Microwave”

By Gerd Schrick, WB8IFM

I don't like shopping the way I used to. Seems like things I am looking for are no longer available or much harder to find. And most everything you find has pushbuttons and electronics included in its design. But sometimes there is no way around.

So we were looking for a new small microwave. We've had a Sears for 19 years, I forgot why we replaced it, did something go bad or were we just tired of it. Anyway its successor, almost an exact duplicate, showed signs of wear after 12 years. Some paint on the inside had come off and a little bit of rust was showing. So the xyl hinted we needed a new one!

We've seen the bigger ones at friends, and the kid's places and didn't like the complicated pushbutton systems. I knew they were still offering small ones, but they were not being pushed and you had to look hard to find them in the store.

Then we found a “portable” microwave advertised for \$ 45 at a new Sears “Outlet” store. As you know outlet stores sell items at reduced prices and/or attract cheapskate customers who think they get overcharged in the regular store.

This was a brand new store and they sure had low pricing to attract new customers. So we went. The microwaves were easy to locate, but these were all the big ones. We looked left and right and at the lower shelves, but the small ones were nowhere in sight. I headed for the sales counter to inquire and when I was almost there, looking over my shoulder, I did see a large pile of boxes, about the size that could contain a small microwave.

The store manager had observed us and came now up to help us. We were right, the pile of boxes contained the small microwaves. One box was opened and the microwave pulled out for inspection. I brought my tape measure and checked the measurements. This unit, although rated higher in power and in inside space, was actually not quite as wide but had the same height and depth as our present one. Five minutes later we wheeled it out the door and were on the way home.

These new small microwaves are nowadays called “portables”, but it's not what you might think. They do not operate on batteries. That would be an accomplishment. I remember a few years ago there was a ham walking around the Hamvention with a kW- portable, and man, was he loaded down. I didn't follow him, but he sure had to take a lot of breaks.

No, the “portable,” as far as I could tell, just refers to the fact that you (one person) can lift the microwave from the shopping cart into the trunk of the car and at the house you can carry it into the kitchen and place it on the counter all by yourself.

Of course it came with pushbuttons, 26 in all, of those maybe we use a half dozen, and after a while you get used to it. An improvement is the LED digital clock. It is probably quite accurate, run from the 60 cycle AC. These AC controlled clocks still beat the “rune of the mill” quartz clocks. The reason, of course, poor or non existing check of the x-tals.

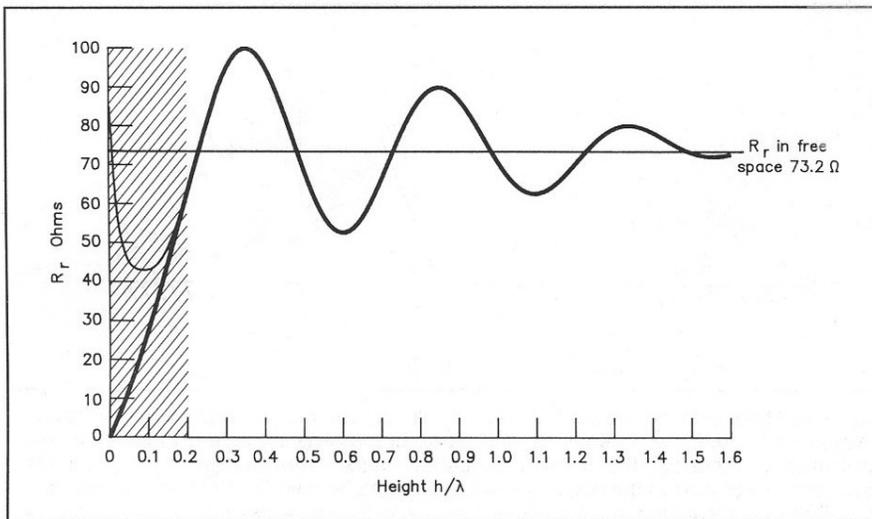
As I mentioned, the outside dimensions are just a mite smaller than the ones from the previous one, but what about the inside. I got my tape measure and measured $13W \times 7.5H \times 10.5D = 1023.75 \text{ CU.IN.}$ which is just .6 CFt. and not the .8 Cu. Ft. as advertised and printed boldly on the box. Had the microwave shrunk since it was manufactured like the famous 2x4s? Well I checked the “Consumer Reports 2013 Buying Guide” and low and behold: there were 17 microwaves listed with their claimed capacity and their measured real capacity, and would you believe, there was not one that measured up. All were a lot smaller. Claimed capacity was overstated from a minimum of 33% to a maximum of a whopping 150%.

Cubesat Explained

A **CubeSat** is a type of [miniaturized satellite](#) for [space research](#) that usually has a volume of exactly one [liter](#) (10 cm cube), has a mass of no more than 1.33 kilograms,[\[1\]](#) and typically uses [commercial off-the-shelf electronics](#) components. Beginning in 1999, [California Polytechnic State University](#) (Cal Poly) and [Stanford University](#) developed the CubeSat specifications to help universities worldwide to perform space science and exploration.

The majority of development comes from academia, but several companies have built CubeSats, including large-satellite-maker [Boeing](#). The CubeSat format is also popular with [amateur radio satellite](#) builders.

He Who Looks to The Stars Will Never Feel Alone



Radiation Resistance of a Half Wave Dipole over Ground in Wavelengths

Fig 5—Radiation resistance, R_r , of a half-wave dipole as a function of height above ground. Heights below 0.2 wavelength will not yield reliable results because of local induction field earth losses coupling into the antenna and the finite thickness of the earth current. At greater heights, these effects are considered negligible. Below 0.2 wavelength, the input impedance of the half-wave antenna will be approximately as shown by the dotted line, depending on earth parameters and frequency.

This is Lloyd, NE8i/r, EN73 reporting
New Year Sporadic E and more -

1-4-13

6M has been opening up. Nice opening New Years eve. Mostly the East Coast. Also, the last few days. New Years Eve, about 8:30 PM EST N8JYA EN74 reported hearing a VE5 repeater in Saskatoon, Saskatchewan for about 40 minutes. 145.27 . He tried calling them. No success. Tried calling CQ on some simplex, and 2M SSB, but no activity or responses. On the local FM net, KC8QE EN74 reported hearing some W0 activity from Littleton Colorado about then on 2M FM, but did not pay enough attention enough to verify. He thought it could have been some internet link or something. New Years eve, heard and worked several strong 6M contacts. Extremely strong signals. Mostly New England. I did not check 2M. Band openings are always nice.

Other activity;

January Mad. WX looks like it might be reasonable. So, planning to rover down to US127 and M21. St Johns. About 9:30 AM or so.

My Rover plans for January, are slowly comming together. All depends on roads and driving conditions. Too icy, snowy, I stay home. Safety first. Current plans are for Saturday, EN74, TC, Along Lake Michigan area. Sunday, drive down to EN82. Then EN72, Lansing, and GR, then home.

January 2013 Microwave Activity Day report from EN73 NE8i/r 5/6 Jan 2013

Weather and roads looked like they might be reasonable. Roads were reasonable. Drove down to St Johns US127 and M21 EN73ra. Pool car parking lot. With the January contest comming up, decided to try out a few things. Best to test out paths, and everything **before a contest**. Not during. Left the house at sunrise. 8:15AM. Checked out distant TV stations, and conditions were definetly up. Sky, nice and clear. Got down the hill on M115. Pea soup fog. Freezing fog type. Which stuck to everything, coated everything and made driving slow. Woods were pretty. At Mt Pleasant, the fog started to lift. First sunny, then cloudy. Made it to St Johns about 9:30.

On the air were K8MD EN82 K8JA EN82 and KF8QL EN72. Found out that the 1296 front end needs work, or a good pre amp. I have one, but did not bring it along. Unable to make the path to KF8QL on 1296. Tried with K8MD, he was about s5. Should have been much stronger. Just made it with K8JA. They had no problem hearing me with the 1W. Looked for the usual 1296 beacons. Nothing. On 2304, Mark was really stong as usual. So, more work to do.

Currently, getting rover ready for the January contest. I hope the roads are ok, and weather is reasonable. TC and along Lake Michigan Saturday. Sunday, the HP swap and EN82. Then West on I-96 to GR and back home. If the weather or roads are bad, then changes will happen. Will have the usual collection of equipment and bands. I do not have 4WD or snow tires. So, that limits things.

February MAD. Will be like this month. Depends on weather and roads.

Working on a 902 beacon. Seems to be running ok on the bench. Waiting for a 902.3 xtal. Lots of bench projects.

I noticed in the latest QST issue, K9JK and his contest results write up. At the end, he paraphased my quote about we make activity happen. Yep. We certainly do.

73, Lloyd NE8i/r EN73 etc

[Planets like Earth Fill the Galaxy](#)

By Michael Moyer Jan 8, 2013 Scientific America

LONG BEACH, Calif.—Look up on a starry night. Almost every one of those tiny pricks of light is home to an unseen world. Our Milky Way galaxy is [full of planets](#)—100 billion or more—and many of those planets are Earth-like rocks (although our solar system still appears to be an oddball). Such are the major findings that astronomers are announcing here at the semi-annual meeting of the American Astronomical Society, where the halls are crackling with excitement as we all bear witness to a hidden, rocky universe beginning to coalesce out of the darkness.

The great explosion of planetary information is coming courtesy of [the Kepler telescope](#), which has been peering at one small slice of the night sky to search for momentary dips in brightness that happen when a planet passes in front of its host star. [Kepler scientists](#) announced that they have found [an additional 461 planet candidates](#), bringing the total number of such Kepler-found candidates to 2,740. (These objects all look like planets, but could potentially turn out to be something else like a double-star system upon further examination. “It’s likely that 90 percent or more of these candidates are going to be bona fide planets,” according to astrophysicist Natalie M. Batalha of NASA Ames Research Center.)

Most of Kepler’s new planet candidates aren’t the big Jupiter-like [planets](#) that early planet scans were sensitive to—they’re Earth-like planets or so-called “super-Earths,” planets about twice the diameter of Earth.

Of course, Kepler can only find planets that are aligned just so—the planet must pass directly between its host star and us. There’s no reason to think that most planets are lined up this way. “For every transiting planet that we identify there are 10 to 100 more that aren’t transiting,” said Batalha. The question becomes: how many planets are out there that we *don’t* see? The answer: lots.

“Almost all sun-like stars have a planetary system,” said Francois Fressin, an astronomer at the Harvard-Smithsonian Center for Astrophysics who has been exploring statistical models of [Kepler data](#). “If you travel to a sun-like star it will have a planet. We can’t say if it will be *welcoming*, but it will have a planet.” What would an unwelcoming planet be? Something very close to its star, and therefore very hot. Those close-up planets whip around their stars in a matter of days or weeks, which means that Kepler has seen them cross in front of their stars many times by now. Fressin’s [recent work](#) has shown that about one in six stars is home to a rocky, Earth-like planet that orbits its star within 85 days or less. For longer-period planets, we just have to wait for more observations.

What about Earth-like planets with Earth-like orbits? Of the 461 new planet candidates, 51 of them are in the so-called “habitable zone,” the Goldilocks region around the star that’s at just the right temperature for liquid water to exist. And one of these new planet candidates has all three of the qualities we’re looking for in a twin Earth: it’s in the habitable zone, it’s only 1.5 times the size of Earth, and it’s orbiting a sun-like main sequence star.

This last attribute is important, because most stars are not, in fact, like our sun. Most stars in the galaxy are so-called red dwarfs—small, dim, cool stars that are our galaxy’s “silent majority,” according to John Johnson of the California Institute of Technology. Red dwarfs make up 70 percent of all stars in the galaxy, and these are [absolutely full of planets](#), says Johnson—on average, about one per star. Summing up all the red dwarfs in the galaxy and all the planets that they host, we can estimate that the Milky Way is home to at least 100 billion planets. “Our solar system is rare among the galaxy’s population of planetary systems,” says Johnson, “because our star is not a red dwarf.” But with 100 billion possibilities to choose from, who would bet that there’s one not like us peering back through that darkness?

What will the Future look like?

By Gerd, WB8IFM

The Scientific American has a monthly feature that looks back in time like: 50 years ago, 100 years ago and 150 years ago. The 50 years ago I remember and was part of, the 100 years ago I have heard a lot of and am quite interested in. 150 years ago is beginning to look what you call history. This takes effort to follow and understand.

This January issue reports: 50 years ago: the Cold War was going on and the race to the moon was on! 100 years ago: "The limousine or torpedo touring car of the present year is but a link in the gradual transformation of the horse drawn buggy into the completely enclosed, dust-proof, silent and comfortable "car of the future." (illustration) 150 years ago: "*The London Daily News* says; that the garotte panic is very wide spread in that great city, and it is driving the citizens to very ridiculous measures for protection. Revolvers and bowie-knives are simple weapons compared with the dangerous arms which some self-defenders carry. On the scientific front: "two German professors, Bunsen and Kirchhoff developed "spectral analysis". "Kirchhoff used prisms of very perfect workmanship to examine the solar spectrum... He saw whole series of nebulous bands and dark lines, and a new field of vision, like that first developed by the microscope, was opened up."

Now, for the January 2013 issue, the Scientific American commissioned its best researchers/writers to explore and speculate what the future of mankind might look like. For sure, we will have to look into the vast expanse of space as our planet Earth will soon not be able to support the growing population. There are a total of 7 articles in that issue addressing the future. Those articles deal with speculations and predictions that pertain to 50, 100 or 150 years from now. The longest and most interesting article relates to colonizing space and is titled "Starship Humanity" by Cameron M Smith. I recommend picking up the January Issue of SA, most likely you can find it at your library or you might borrow it from one of your friends, who subscribes to it.

What are Space Travelers Up To

First of all: Distances to even the closest stars are immense, in the order from a few to many light years away from us. Then, of course, whether there would be any planets suitable for settlements is not known now. In any case huge spaceships with room for many people, animals, plants, a whole Eco system would be required. A suitable speed for the spaceship is considered to be about $1/10^{\text{th}}$ of the speed of light. At that speed it would take the space Ship 40 years to reach our closest star, which is 4 light years away!

Our Voyager 1 holds presently the speed record in space at 62,400 km/hour or 17km/sec, which is only $1/10,000$ the speed of light, meaning the trip to the closest star would take 40,000 years. You figure out how many generations of people it would take (at 30 years ea) before there might be any landing on some planet possible.

Communication from the spaceship back to earth is not being addressed at all. With our present state of the art the limit would be about the edge of the solar system.

One question: will there be volunteers for such a trip, is answered in the positive. But remember, this is at a time, when there will be too many people inhabiting our planet with food and fuel becoming sparse and natural disasters fill the news. We will be gone by that time, but our children will inherit this mess!

Voyager Space Probe Reaches Edge of Solar System



By Chris Wickham

London Fri Jun 15, 2012

The Voyager 1 space probe has reached the edge of the solar system, extending its record for being the most distant man-made object in space.

According to a statement from NASA's Jet Propulsion Laboratory in Pasadena, California, the spacecraft is sending back data to Earth showing a sharp increase in charged particles that originate from beyond the solar system.

"Voyager scientists looking at this rapid rise draw closer to an inevitable but historic conclusion - that humanity's first emissary to interstellar space is on the edge of our solar system," NASA said in the statement.

Voyager 1, along with its sister spacecraft Voyager 2, was launched in 1977 and is now about 18 billion kilometers from the Sun. It is moving at a speed of about 17 km per second and it currently takes 16 hours and 38 minutes for data to reach NASA's network on Earth. Voyager 2 is about 15 billion kilometers from the Sun.

Between them, the probes have explored all the giant planets of the solar system; Jupiter, Saturn, Uranus, and Neptune, as well as 48 of their moons.

They both carry a greeting for any extraterrestrial life they may bump into, a phonograph record and 12-inch gold-plated copper disk with sounds and images of life and culture on Earth selected by a group chaired by the famous space scientist Carl Sagan.

The charged particles hitting Voyager 1 originate from stars that have exploded elsewhere in the galaxy. They have been steadily rising as it approaches interstellar space but that trend has become sharper in recent months.

"From January 2009 to January 2012, there had been a gradual increase of about 25 percent in the amount of galactic cosmic rays Voyager was encountering," said Ed Stone, Voyager project scientist at the California Institute of Technology in Pasadena.

"More recently, we have seen very rapid escalation in that part of the energy spectrum. Beginning on May 7, the cosmic ray hits have increased five percent in a week and nine percent in a month."

The exact position of the edge of the solar system is unclear but another indicator that Voyager has entered interstellar space is expected to be a change in the direction of the magnetic fields around the space craft. NASA scientists are looking at data from the craft to see if this predicted change has occurred.

"The laws of physics say that someday Voyager will become the first human-made object to enter interstellar space, but we still do not know exactly when that someday will be," said Stone. "The latest data indicate that we are clearly in a new region where things are changing more quickly. It is very exciting. We are approaching the solar system's frontier."

The plutonium power sources on the Voyager probes are designed to last until 2025. When they die, the probes will keep hurtling through space towards other stars in the Milky Way but they will no longer transmit data back to Earth.