THE AERO AERIAL

Happy Groundhog Day *

The newsletter of the Aero Amateur Radio Club
Middle River, Md
Volume 8 Issue 2
February 2011

Editor Frank Stone AC3P

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Ron Distler	W3JEH	Property Mgr	Club Nets	Joe Miko WB3FMT

ABOUT THE AERO AMATUER RADIO CLUB

Meetings: First and Third Wednesdays at 7:30 pm at Coffman's Diner
(Middle River and Orem's Rd.)

Nets: See Local Area Net Schedule

Repeaters: W3PGA (147.24 MHz - / 449.575 MHz -)

WEBSITE: www.aeroarc.us

LOCAL AREA NETS

Day	Time	Frequency (MHz)	NET NAME
Daily	9 – 10 am	147.03	ORIOLE Net
Daily	5:30– 6 pm	3.820	Maryland Emergency Phone Net
Daily	6:30 – 7 pm	146.670	Baltimore Traffic Net
Daily	7 pm and 10 pm	3.643	Maryland/DC/Delaware Traffic Net
1st Tues	7:30 pm	145.330	Baltimore ARES Net
2nd Tues	7:30 pm	146.670	Baltimore County RACES Net
2nd Wed.	8 pm	28.445	AERO ARC Net
4th Wed	8 pm	147.240	AERO ARC Net
5th Wed.	8 pm	449.575	AERO ARC Net

The Aero Quantum Mechanics Net: Anytime any Frequency contact WB3FMT. The last one was on 449.575 MHz on Tuesday 8 pm on March 30t. Who knows where or when the next on may be?

Aero Net Reports

December

10 Meters: WB3FMT(NCS) AC3P W3JEH W3VRD

2 Meters: WB3FMT(NCS) AC3P/m AC3F /m KB3VAE W3JEH WB3LOT QTC1

70 Cm Net: WB3FMT(NCS) W3JEH AC3P W3VRD K3ROJ

Station Activities

W3VRD reports recent storms caused damage to his rotator. **W3JEH** repeater almost on the air. Ron has some audio issues to work out. **AC3P's** mobile platform is SK. Frank is now looking for a replacement. **KB3PGN** is back on duty in the nuthouse known as Annapolis.

Aero ARC's 20 meter beam
A History *by Joe Miko WB3FMT*

PART II

Antenna history provided by various senior club members recalls that the beam is approximately 40 years old. Per Warren the 20 meter antenna is at least 40 years old. (Circa 1970).

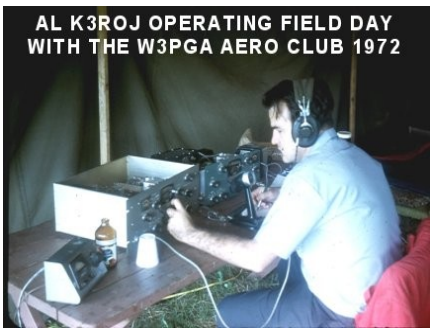

Photo 4 is Al (K3ROJ) using the 20 meter beam in 1972.

Al's stated that his first experience using the 20 meter beam was during Field Day in1972. This antenna works so well that many stations were asked to please stand by as we picked them out one at a time. Now since CW contacts are worth 2 points, the beam is usually left pointed west with all States being easily heard and operators working shifts to keep 20 meters going. One year when installing the beam and tower for Field Day, it was discovered the rotator motor needed replacement. The beam rested on the ground with the driven element facing up and when Field Day began, many stations were worked until the motor arrived. During the last few Field Day events, several CW stations were worked using direct solar power running about 3.5 watts. These contacts were worth extra points and easily worked thanks to this remarkable antenna. Ron W3JEH, has done an excellent job maintaining the beam since it is stored at his location in Perry Hall.

The 76 inch boom section (of the 20 meter antenna) was donated to the Aero ARC. Ralph and Warren got the driven and reflector elements made up of milled aircraft aluminum from a company in PA. In 1997 when the repairs were made, Ralph K3PHH (SK) and Ron W3JEHI went to the Dillsburg Aeroplane Works in Dillsbugh, PA and bought new sections of tubing in order to keep the dimensions of the antenna the same.

The antenna sections are machined so well that the element sections fix inside one another without the need of set screws or clamps. Based on Ron's memory, the dimensions have always been the same, even after the repairs. The major differences are the elements are now in five sections versus the original three and the element tips are slightly smaller in diameter.

The club used to have three 40 foot Rohn towers (consisting of four 10 foot sections). In the old days the club used to construct the three towers and antennas the week before Field day to be used on another contest and left standing until field day.

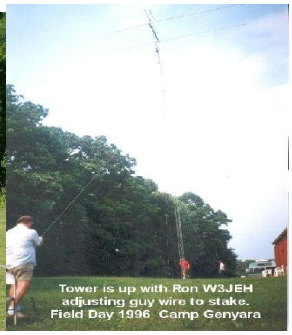

Photo 5 FD 2002 Photo 6 FD 1996

Photo 5 the Rohn tower assembled and ready to accept the 20 meter beam antenna. Field Day 2002.

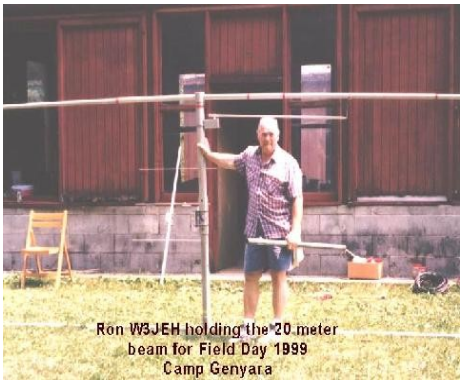

Photo 7- Field Day 1999

By 2000 the club was down to two 40 foot towers, and by 2005 began using the military light towers (30 foot) crank up towers for the 20 meter beam. Currently the 20 meter beam is installed on the military crank up towers or the old BRATS Civil Defense crank up trailer tower.

Photo 8 (FD 2004) Photo 9 (FD 2005)

Photo 8 shows the 20 meter beam on top of the military light tower in this 2004 Field Day photo, photo 9 is from Field Day 2005.

The original design had each three tubing parts for each element. In 1997, due to damage, Ron salvaged as much of the elements as possible to keep the cost of replacing all the tubing. The elements now consist of 5 pieces of tubing plus the driven element has the gamma rod. The driven element parts are marked with red electrical tape and the reflector is marked with blue electrical tape. There are two bundles of tubing per element each wrapped in black electrical tape and stored on the side of my house in the usual spot. The boom has the gamma match capacitor box attached. All the hardware is with the elements. During the past 10 years (author's club membership) I have been present to the building and mounting of the 20 meter beam during Field Day activities. A few questions all ways arise, what goes where and is it a reflector or a director.

During a recent AERO net Ron (W3JEH) stated since he is able to house the antenna he volunteered to

re-spec the antenna and determine once and for all the mysterious question reflector or director? Ron provided the following information about the club's 20 meter beam.

- The spacing between the reflector and driven element is 75 inches (6' 3"). This is close to the optimized 80 inches.
- The driven element is 33' 6"" and the reflector is 35' 6". The reflector is approximately 5% larger than the driven element.
- The gamma rod is 49". The capacitor is nearly fully meshed. I believe the capacitance is 140 mmfd (no markings, just memory).
- The SWR readings were with the antenna at about 5 feet off the ground using an MFJ -269 HF/VHF/UHF SWR Analyzer w/fresh batteries.
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  14.0 MHz = 1.3
  14.1 MHz = 1.1
  14.2 MHz = 1.2
  14.3 MHz = 1.3

Using table (Table 20.14) from ARRL Handbook 2000, the spacing between elements for a 20 meter Yagi Reflector 0 inches, Driven Element 80 inches and the Director 106 inches.
Using table (Table 20.5) from ARRL Handbook 2000, the dipole dimensions for Amateur Bands lists 20 Meters, 14.1 MHz with an overall length of 33 feet 2 inches, Leg Length 16 feet 7 inches.
So the mystery is solved the 2 element beam consist of a Reflector and Driven Element. But how well does this 2 element antenna work. Well during the last 11 years (2000 thru 2010) the Aero radio club has worked Field Day from Camp Genyara, located near Maryland Line, Maryland off of Old York and Bond Road. (Long 76 37 2.7 W / Lat 39 42 3.7 N). During Field Day the club normally runs Class 3A in the Maryland District of Columbia (MDC) Section. Running these 3 HF transmitters we normally run the 20 meter beam, a G5RV multi-ban 40 – 10 meter dipole and either a multiband vertical or other dipoles cut for a specific band other than 20 meters.
The club operates on HF bands 80, 40, 20, 15 10 and UHF 6 and 2 meters. From 2000 through 2010 the club made 7,042 contacts on all bands all modes. Reviewing logging information from those years 2,287 contacts were made using the 20 meter beam. That's a 32.4% for all contacts using a 40 year old work horse. Impressive yes and with the help of Ron (W3JEH) and others it's continued maintenance and up keep to ensure an "Award Winning" antenna.

So if you are around for Field Day 2011 (weekend of June 25/26) stop by and operate the "BEAM" or listen for "W3PGA" from any of your convenient 50 States. (*Ed note: and Europe, Africa, Australia or New Zealand.).*

Joe Miko WB3FMT

N.B. I would thank all of the club members who provided technical and historical information about the 20 meter beam.

Ed. Note That would be W3VRD W3JEH W3JDF and K3ROJ.

From NASA

Kim Newton
256-544-0034
Marshall Space Flight Center, Huntsville, Ala.
Kimberly.D.Newton@nasa.gov
01.19.11

RELEASE : 11-009

NanoSail-D Ejects: NASA Seeks Amateur Radio Operators' Aid to Listen for Beacon Signal

HUNTSVILLE, Ala. -- Wednesday, Jan. 19 at 11:30 a.m. EST, engineers at Marshall Space Flight Center in Huntsville, Ala., confirmed that the NanoSail-D nanosatellite ejected from Fast Affordable Scientific and Technology Satellite, FASTSAT. The ejection event occurred spontaneously and was identified this morning when engineers at the center analyzed onboard FASTSAT telemetry. The ejection of NanoSail-D also has been confirmed by ground-based satellite tracking assets.

Amateur ham operators are asked to listen for the signal to verify NanoSail-D is operating. This information should be sent to the NanoSail-D dashboard at: http://nanosaild.engr.scu.edu/dashboard.htm. The NanoSail-D beacon signal can be found at 437.270 MHz.

The NanoSail-D science team is hopeful the nanosatellite is healthy and can complete its solar sail mission. After ejection, a timer within NanoSail-D begins a three-day countdown as the satellite orbits the Earth. Once the timer reaches zero, four booms will quickly deploy and the NanoSail-D sail will start to unfold to a 100-square-foot polymer sail. Within five seconds the sail fully unfurls.

"This is great news for our team. We're anxious to hear the beacon which tells us that NanoSail-D is healthy and operating as planned," said Dean Alhorn, NanoSail-D principal investigator and aerospace engineer at the Marshall Center. "The science team is hopeful to see that NanoSail-D is operational and will be able to unfurl its solar sail."

On Dec. 6,, 2010, NASA triggered the planned ejection of NanoSail-D from FASTSAT. At that time, the team confirmed that the door successfully opened and data indicated a successful ejection. Upon further analysis, no evidence of NanoSail-D was identified in low-Earth orbit, leading the team to believe NanoSail-D remained inside FASTSAT.

The FASTSAT mission has continued to operate as planned with the five other scientific experiments operating nominally.

"We knew that the door opened and it was possible that NanoSail-D could eject on its own," said Mark Boudreaux, FASTSAT project manager at the Marshall Center. "What a pleasant surprise this morning when our flight operations team confirmed that NanoSail-D is now a free flyer."

If the deployment is successful, NanoSail-D will stay in low-Earth orbit between 70 and 120 days, depending on atmospheric conditions. NanoSail-D is designed to demonstrate deployment of a compact solar sail boom system that could lead to further development of this alternative solar sail propulsion technology and FASTSAT's ability to eject a nano-satellite from a micro-satellite -- while avoiding re-contact with the FASTSAT satellite bus.

Follow the NanoSail-D mission operation on Twitter at:

http://twitter.com/nanosaild

For additional information on the timeline of the NanoSail-D deployment visit:

http://www.nasa.gov/pdf/501204main_NSD2_timeline_sequence.pdf

Correction

Aero VE Test Schedule for 2011

All test sessions are scheduled for 1 p.m. At the White Marsh Library for the following dates:

January 22
March 19
May 21
September 17
November 19

Walk-ins are welcome. Bring two forms of ID (picture) Fee:$15
For more information contact Pat Stone AC3F Phone: 410-687-7209
Email: ***ac3fatjuno.com*** Website: http://www.aeroarc.us/vetesting.html

*Thank you to the Woodchuck Amateur Radio Club of Parma, Ohio for permission to use their logo.
www.woodchuckradio.org

In Memoriam

Mark Falkenhan

It is with great sadness that we report the passing of Volunteer Firefighter, Mark Falkenhan , the brother of Aero Member, Eric, WA3TAD. Mark passed away from injuries sustained in a blow-out while searching for victims during a four-alarm apartment fire on January 19th.

Mark was a pupil at Hawthorne Elementary School and graduated from Mt. Carmel High School. He was a Baltimore County Firefighter and Rescue Trainer for 16 years and retired from that agency to join the U.S. Secret Service where he trained agents in rescue techniques. Mark continued to serve Baltimore County with many different Volunteer Fire Companies.

A viewing was held at Rulh National Guard Armory. A funeral service was held at The Cathederal of Mary Our Queen with burial at Dulaney Valley Memorial Gardens.

In addition to brother Eric, Mark is survived by his wife Gladys; sons, Christian and Garrett; his father, Mr. Casper Falkenhan, and sister, Mrs. Mary Lou Farnsworth.

The Aero Amateur Radio Club extends our sincere condolences to the the family of this true hero of our community. Our thoughts and prayers are with you.

Ed. Note: Donations in honor of Mark may be made to the National Fallen Firefighters Foundation or the Baltimore County Fallen Firefighters Foundation.

February 2011

		1	Meeting Coffman's 7:30 pm 2	3	4	5
6	7	8	10 meter net 28.445 Mhz 8 pm 9	10	11	12
13	Valentine's Day 14	15	Meeting Coffman's 7:30 pm 16	17	18	ARRL DX Contest CW 19
ARRL DX Contest 8 pm 20	Presidents' Day 21	22	2 meter net 147.24 Mhz 8 pm 23	24	25	26
27	28					

From the Skies over Mt. Essex

SKY Events for February 2011

February 1st – Constellation Orion is well up at sunset the belt stars point to the brightest star in the sky. That is Sirius the Dog Star, it is -1.46 magnitude.

February 2nd - New Moon

February 6th – Jupiter is left of the crescent Moon. The Moon passes 6° north of Uranus.

February 10th – First Quarter Moon

February 17th - Full Moon "Snow Moon" Native American tribes or "Trapper's Moon" the Colonial Americans.

February 21st - The Moon passes 8° south of Saturn.

February 24th - Last Quarter Moon.

February 25th – The planet Mercury is in superior conjunction, it is directly behind the Sun in line with the Earth.

February 28th At 5a.m EST the moon is above and west of Venus about 7°. The crescent Moon is 1.6° North of at 11PM EST. On *March 1st a*t 5a.m EST the moon is east and below Venus about 4°.

Planet Lookout

Mercury - In the glare of the Sun.

Venus – Seen in the morning dawn. See the Moon event on February. 28th and March 1st. Very Bright -3.7 magnitude.

Mars – In the Sun's glare.

Jupiter and **Uranus** – Look towards the southwest at dusk. Bright object at -2.2 magnitude. The planets are still near each other, about 4° apart. Uranus will be to the lower right of Jupiter at +5.9 magnitude.

Saturn- At +0.9 magnitude rises around 10 p.m. EST..

Bigger is Better, the need for glass!

Ever think of using Binoculars for astronomy, it can be fun and exciting! Binoculars provide a wide view of the sky and bring out the dinner stars for urban dwellers.

The first thing to understand is that binoculars are really just two small telescopes connected in parallel. Binoculars are designed to give a correctly oriented, right side up view. This makes them ideal for terrestrial viewing, or for locating astronomical objects. A good pair of binoculars is one of the handiest accessories for the astronomer. A good binocular dealer can help you select the binoculars that best fit your needs," and it is always worth the extra money, test see before you purchase. Prisms are what let you see a correctly oriented image when you look through a pair of binoculars. There are two types of prisms in common use, Porro prisms and roof prisms.

The Porro prism design is optically superior to the roof prism design. The Porro prism binoculars have a single pivot between the two halves of the binocular, and are therefore easy to adjust for the distance between your eyes.

Good binoculars have antireflection coatings on all of their glass surfaces. The size of binoculars is described by using a set of numbers, as in "7x50" or "8x60." The first number is the magnification; the second number is the size of the objective lens in millimeters. So7 power by 50 mm is just less than 2 inches. Sometimes another number is used it is the Field of View (FOV) 500feet at 1000 yards. This number is the number of linear feet (how wide) you see at 1,000 yards. One degree at 1,000 yards equals 52.5 feet, 5 degrees equals 263 feet. The Moon is 1/2° wide. In the example above you would be able to see a piece of the sky 9 ½ ° wide that would be 19 moons wide.

Another number you need to know is the exit pupil number; this indicates the how much light is transmitted to your eye. This can be computed by dividing the size of lens by the power. At 7x the 50mm front objective provides a 7.1mm exit pupil, The diameter of the exit pupil determines The human eye loses its ability to adapt to dim light as it ages, so a middle-aged person's maximum pupil size is typically down to around 5mm. Elderly eyes are often limited to about a 4mm pupil maximum pupil. So as we age, the exit pupil size we need decreases.

Good choices for astronomical viewing are 7x50, 8x56, and 9x63. Larger sizes (higher magnification) will require a tripod to keep them steady. Pick the highest power that you can afford and hold steady. Happy viewing and clear nights!