THE AERO AERIAL

The newsletter of the Aero Amateur Radio Club

Volume 1 Issue 5

May 2004

Editor Frank Stone AC3P

Officers

Al Alexander	K3ROJ	President
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Pat Stone	AC3F	Corresponding Secretary
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Public Service	Frank Stone	AC3P
RACES/ARES	Joe Miko	WB3FMT
Clandestine Operations	Ron Distler	W3JEH
Contests	Bob Landis	WA3SWA

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 -)
W3JEH (223.24 MHz -)

WEBSITE: http://mywebpages.comcast.net/w3pga/

LOCAL AREA NETS

Day	Time	Frequency (MHz)	NET NAME
Daily	9 – 10 am	147.03	ORIOLE Net
Daily	6 – 6:30 pm	3.920	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

GBHC Timonium 2004


There are many events in life that marked the passing of the year for the ancients. The winter solstice marked the stopping of the sun's descent towards the nether regions. The arrival of the new moon marked the start of a month. The appearance of a comet was a harbinger of change.

So it is in the ham radio world. Following on the heels of the first day of spring is The Greater Baltimore Hamboree and Computerfest.

What began as a small ham-fest in 1971 put on by Brother Girard at Calvert Hall College has grown over the years into one of the largest ham and computer shows on the East Coast now sponsored by the Baltimore Amateur Radio Club.

Today the event is a two-day flea market and ARRL Maryland State Convention at the Timonium Fairgrounds. It has attracted hams from as near as Essex and as far away as Bombay.

Aero members were again present in large numbers Al, K3ROJ was cornering the market on 9913 coax, while Eric, KB3JDE was running his fly-by-night electronics emporium in the tail-gate area. Joe WB3FMT and Frank AC3P were making the rounds at the Emergency Communications and Traffic handling forums get the latest information from the gurus in those fields. Frank was also acting as purchasing consultant for Joe's station upgrades. Ken, KB3JVP, and Dave KB3KRB were patrolling the grounds for good deals.

Later Saturday evening Joe WB3FMT represented the Aero club at the State Convention banquet while Pat, AC3F and Frank, AC3P, headed up the ARRL VE Team delegation.

Even though the event began with the customary baptism by Mother Nature, the weather relented enough to allow a good time to be had by all.

Son of Gaithersburg No More

The descendant of the old Gaithersburg Hamfest, the FallFest jointly sponsored by the Foundation for Amateur Radio and the Columbia Amateur Radio Association has been cancelled according to a notice released by FAR.

The letter stated the there were only two volunteers to help put on the 'fest and there was no may the organization could support the effort.

In a separate letter the CARA group cited that they were not consulted with this decision and were terminating their partnership with FAR in producing a hamfest. CARA went on to state that they would peruse putting on a hamfest in October at the Howard County Fairgrounds as they did prior to their association with the FARFEST, which was held in September.

Station Activities

WB3FMT is sporting a new mobile platform. KB3KRV acquired a dual-band HT at the hamfest. KB3JDE is checking out abandoned towers. KB3JVP is working nights for a while.

Public Service

There are several events needing our services over the next few months. Please consider helping with one or more of them.
April 17: MS Walk – Baltimore contact BRATS n3cva@hotmail.com
April 18: MS Walk – Towson contact BRATS n3cva@hotmail.com
April 25: March of Dimes WalkAmerica in Baltimore contact BARC aa3sb@arrl.net
May 1: Myasthenia Gravis Walkathon in A A County BRATS n3cva@hotmail.com
May 15: American Diabetes Tour de Cure, Harford County contact AERO ac3p@arrl.net
May 30: Veteran's Run Baltimore contact BARC aa3sb@arrl.net
June 10-11: MS Bike Tour, Salisbury, Md. Contact BRATS n3cva@hotmail.com

Aero Net Reports

Seventy Cm Net - Check-ins: WB3FMT (NCS), KB3JDE, K3ROJ, W3VRD, AC3P, AC3F
Two Meter Net - Check-ins : WB3FMT (NCS), KB3KRV, W3JEH, AC3P, K3ROJ, AC3F, W3JEH, KB3JVP, KB3JDE, N3VMF

Ten Meter Net - Check-ins: WB3FMT (NCS), K3ROJ, W3JEH, KC3EF, KB3GFC, AC3P

RACES/ARES

The April Drill took place Tuesday the 13th. AERO supported the operation by covering the White Marsh VFD, formerly known as Cowenton VFD. Joe WB3FMT and Dave KB3KRV provided the manpower.

COMING EVENTS

April 25	March of Dimes Walkathon Baltimore
April 27	2 meter net 8 pm
May 1	Graysonville Ham-fest
	VE Testing BARC Facility Owings Mills.
May 2	Hagerstown Ham-fest
May 5	AERO Meeting Coffman's 7:30 pm
May 8/9	Armed Forces Day Crossband Communications Event
May 12	10 meter net 8 pm
May 15	K3FBI Law Enforcement Memorial Day Special event.
	Dayton Hamvention Dayton, Ohio
	ADA Bike Tour Harford County Md.
May 15/16	Armed Forces Day Crossband Communications Event
May 19	AERO Meeting Coffman's 7:30 pm
May 26	2 meter net 8 pm
May29	VE Exams – White Marsh Library 1 pm.
	Chestertown Tea Party Special Event K3ARS.
	For details www.qsl.net/k3ars
May 30	Memorial Day Ham-fest, Howard County Fairgrounds
	Md. FM Assoc.

Free Stuff

Dave KB3KRV is offering some free electronic odds and ends to anyone interested.

1. Various circuit boards from common electronics. (TV's, VCR's, stereo's, computers, power supplies.....etc)
2. Vacuum Tubes (only a few numbers listed below)
    1. 23Z9
    2. 38HE7
    3. 17BFII
3. Various IC's
4. B+W CRT tube (with deflection coils and tube plug (sony no. 73110510)
5. various sizes of machine screws and bolts for cases.

If anyone is interested. Contact Dave at KB3KRV57@CS.COM

Letters From our Readers

Essex-Middle River Hamfest

From: RonDistler@aol.com [mailto:RonDistler@aol.com]
Sent: Tuesday, March 16, 2004 8:25 PM
To: jmiko@verizon.net
Subject: Re: FW: The April Aerial

NOW You got it right. If only 500 people reserve tables before the hamfest, I can afford that cruise vacation. Send in your checks folks

From AF1DAY
From: April Foolston [mailto:af1day@hotmail.com]
Sent: Wednesday, March 31, 2004 9:10 PM
To: jmiko@bellatlantic.net
Subject: Ham swap tomorrow

Hi, I am originally from Maine and now living in Maryland but am not familiar with your area and would like to have some directions how to get
there tomorrow. The admission is rather steep but the door prize sounds

well worth it. Thank you, A. Foolstien

Margauritaville

From K3FT:
Joe's EXCELLENT article about TIME reminded me of some measurements of time that MAY not be as familiar to you as the ones Joe mentioned.

1- There is MUSICAL TIME - as in 'Does anybody REALLY know what time it is? Does anybody REALLY care?" (Chicago)
2 - There is 'Relative Time' (Einstein) where relativity is best explained by understanding the comparison between sitting buck-naked on a hot stove top for 30 seconds versus kissing your girlfriend/wife for 30 seconds.
3 - There is 'CW TEST TIME' (also known as 'WOODLON TIME') which is that unit of time measured between the time you START the FCC CW test and the time you get the results of the test.
4 - There is 'CONTEST TIME' where time in the operating chair can SEEM like hours or SEEM like seconds, depending on the band conditions.
K3FT

RADIO DETECTION and RADIO TRANSMISSIONS DURING METEOR SHOWERS

Submitted by WB3FMT Joe Miko

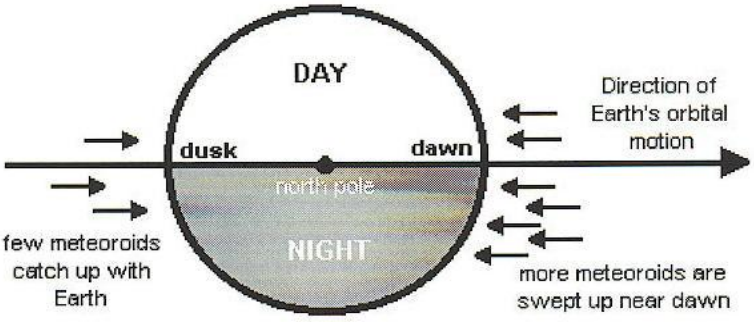
The term meteor applies not only to the streak of light produced by a meteoroid, but also to the column of ionized atoms and molecules along the path behind the meteoroid. These meteor trails are capable of scattering radio signals from terrestrial stations. Radio detection rates tend to be higher than visual observation rates because particles down 10-5 kg can be detected visually, while particles down to 10-10 kg can be detected by radio. Assuming a density of 1 t/m3, these mass limits correspond to diameters of about 3mm and 0.06 mm, respectively.

There are two types of meteor trails exist: underdense and overdense; they are determined by the density of free electrons. Reradiated signals from underdense trails (fewer than 2 x 10-14 electrons per meter) rise above the receiver noise almost instantaneously and then decay exponentially. The duration of many meteor bursts is about a second or less. Reflected signals from overdense trails may have higher amplitude and longer duration, but destructive interference due to reflection from different parts of the trail can produce fluctuations in the signal. Note that other means of signal propagation may be heard on the FM band, but only meteor signals have their characteristic fast rise-time and short duration.

Data for selected meteor showers for 2004, appear in the Table of Meteor Showers below.

Meteor Showers	**Date of Maximum**	**TIME UT**	**Radiant RA**	**Radiant DEC**	**Associated Comet**	**Avg. Hourly Rate**	**Avg. Duration Days**
Quadrantids	Jan 3	6h	15h 28m	+50		120	1
Lyrids	Apr 22	4h	18h 16m	+34	C/1861 G1	20	2
Eta Aquarids	May 4	17h	22h 24m	0	1P/Halley	60	3
Delta Aquarids	July 28	19h	22h 36m	-17		90	7
Perseids	Aug 12	11h	03h 04m	+58	109/Swift-Tuttle	90	5
Orionids	Oct 21	3h	06h 20m	+15	1P/Halley	20	2
Taurids	Nov 5	4h	03h 32m	+14	2P Encke	15	
Leonids	Nov 17	9h	10h 08m	+22	55P/Temple-Tuttle	15	
Geminids	Dec 13	22h	07h 32m	+32	Asteroid 3200	120	3
Ursids	Dec 22	7h	14h 28m	+76	8P/Tuttle	20	2

These data are for visual observations and should only be considered as guidelines for radio purposes. The sporadic meteor rate (visual and radio) peaks about 6 a.m. local time (i.e. on the advancing side of Earth in its orbit) and is minimum near 6 p.m.



The rate will vary from a few per hour for off-peak times for sporadic meteors to several hundred per hour during a very active shower. Unlike visual observation, radio detection of sporadic meteors or shower meteors can be undertaken in daylight and during inclement weather. Frequencies between 20 MHz and 150 MHz are typically used for meteor detection. Both amplitude and duration of meteor bursts are frequency-dependent—they decrease with increasing frequency. At the lower frequencies, however, galactic as well as human-made noise (particularly in urban areas) become limiting factors. Also, as the wavelength becomes comparable to the width of the meteor trail, the echo strength decreases.

The commercial FM broadcast band (88 MHz to 108 MHz) provides the best introductory opportunity for meteor detection. The abundance of over-the-horizon stations transmitting 24 hours a day ensures that a meteor burst can be heard from a suitably positioned meteor regardless of the time of day.

In amateur meteor forward scattering, existing transmitters are used. First the transmitter must transmit on right frequency. Lower frequencies below 30 MHz are not usable there is a masking of broadcast through ionosphere propagation, masking the meteoric reflection. Higher frequencies above 150 MHz are also not suited because of due to a loss in duration and power of reflection losses.
FM Broadcast stations are very popular. Their frequency 87.5 to 108.0 are within the optimum frequency range.

Secondly, the transmitter must be distant enough to prevent direct reception. With out mountains, the minimal transmitter distance is 300km (approx 186 miles) the maximum distance is 2,000km (approx 1,243 miles. Using the mountains as a shield reduces the transmitter distance. The transmitter should be at least 30KWT.

The technique involves listening on a frequency not used by a local FM station. A receiver with digital frequency readout is therefore an asset. Frequencies throughout North America are assigned at 200-kHz intervals between 88.1 MHz and 107.9 MHz. In the absence of a clear frequency, it is possible to use a frequency occupied by a station with a very weak signal although weak meteor bursts will be masked. Alternatively, a TV set (channels 2-4 (54 to 72MHz) and channels 5-6 (76-88 MHz) can be used, provided the set is connected to an antenna rather than through cable TV. For either the FM band or the TV

channels, an outdoor antenna is preferable. It is also possible to listen using the FM radio in your car.

An antenna system used by the NASA Marshall Space Flight Center uses a Yagi tuned for 70 MHZ. The TV antenna is sitting on the ground and pointing straight up. If you a trying to capture an over the horizon FM station the antenna can be pointed towards that station.

"The antenna used by NASA MSFC is a 6-element Yagi; it is a commercially available cut-to-frequency channel 4 TV antenna sitting on the ground and pointed straight up," says Dr. Rob Suggs of the MSFC Engineering Directorate. "We use the CW demodulator on our ICOM PCR-1000 so that 67.250 MHz (channel 4 zero offset) appears at about 700 Hz. This also inverts the passband so that the Doppler shift of meteor echoes is reversed (frequency increases rather than decreases to the 'zero' frequency of the trail echo). The filter is set to 3 kHz bandwidth and the AGC is turned off."

"The closest transmitters on this frequency are in Dothan, AL, Charleston, SC, Oak Hill, WV, Little Rock, AR, and Kansas City, MO," he continued. "The map, below, shows local Channel 4 zero offset TV transmitters with a circle around each showing the areas they illuminate down to an altitude of 100 km (typical meteor altitude). Although the transmitters are over the horizon for our station on the ground, a meteor at 100 km over us has a direct line of sight. The scattering geometry is tricky, that's why we frequently see a meteor visually but don't hear any echo from it."

Amateur Radio users can utilize the 6 meter and 2 meter bands to transmit and receive digital or CW data. Due to the duration of the of a meteor trail lasting from 0.1 seconds to several seconds an efficient method of data transmission is required. The use of high speed CW using HSCW (High Speed CW) transmits about 8,000 letters per minute or 13 character for a 0.1 second ping. The program transmits for a set period of time and then goes into a listing mode. In a article by Joe Taylor, K1JT in QST December 2001, pgs 36-41, he explains how to use a new software program that can be used for VHF communications.

Edited and updated by Joe Miko

References:

Observer's Handbook 2004, The Royal Astronomical Society of Canada pg. 221
BY PHILIP GEBHARDT
QST December 2001 pgs 36-41 WSJT: Mew Software for VHF Meteor-Scatter Communications by Joe Taylor, K1JT
WSJT (Weak Signal Communications by KIJT) a free download at Pulsar.princeton.edu/~joe/K1JT download WSJT100.zip or a similar file name with a higher version number.

Also see *Sky & Telescope*, 94 (December 1997), No. 6, p. 108.

Further information can be found on the following websites:

www.odxa.on.ca/meteor.html
www.imo.net/calendar/cal04.html
www.spaceweather.com/glossary/nasameteorradar.html
www.ionosonde.iap-kborn.de/sky_main.htm

ARMED FORCES DAY (AFD) WEEK MILITARY/AMATEUR CROSSBAND COMMUNICATIONS TEST (8-9 May 2004)

The Army, Air Force, Navy, Marine Corps, and Coast Guard are co-sponsoring the annual military/amateur radio communications tests in celebration of the 54th Anniversary of Armed Forces Day (AFD). Although the actual Armed Forces Day is celebrated on Saturday, May 15, 2004, the Armed Forces Day Military/Amateur Crossband Communications Test will be conducted one week earlier on May 8, 2004 (local). The reason is so the AFD Military/Amateur Crossband Communications Test will not conflict with the Dayton Hamvention (14-16 May 2004) which is on the same weekend as the actual Armed Forces Day.

The annual celebration features traditional military to amateur cross band communications SSB voice test and the Secretary of Defense message receiving test. These tests give Amateur Radio operators and short wave listeners an opportunity to demonstrate their individual technical skills and receive recognition from the Secretary of Defense and/or the appropriate military radio station for their proven expertise.

QSL cards will be provided to those making contact with the military stations. Special commemorative certificates will be awarded to anyone who receives and copies the digital Armed Forces Day message from the Secretary of Defense.

PART I. MILITARY-TO-AMATEUR CROSS BAND SSB TEST CONTACTS. Military-to-Amateur cross band operations will take place on the dates/times in ZULU (UTC), and frequencies listed below for each station. Voice contacts will include operations in single sideband voice (SSB). Some stations may not operate the entire period, depending on propagation and manning. Participating military stations will transmit on selected Military MARS frequencies and listen for amateur radio stations in the Amateur bands indicated below. The military station operator will announce the specific amateur band frequency being monitored. Duration of each voice contact should be limited to 1-2 minutes. The following stations will be transmitting on MARS frequencies listed below which are provided as 'Window/Dial Frequency' in kHz.

STATION: AAZ (8 May 1300Z - 9 May 0200Z)

Frequency	Emission	Amateur Band
4038.0 kHz	LSB	80M
6913.0 kHz	LSB	40M
7424.0 kHz	USB	40M
13741.5 kHz	USB	20M
13993.0 kHz	USB	20M
24760.0 kHz	USB	12M
27788.5 kHz	USB	10M

Location: Fort Huachuca, AZ
Address:
CDR NETCOM/9th ASC

ATTN: NETCOM-OPE-M (MARS) (31)
2133 Cushing Street
Ft. Huachuca, AZ 85616-7070
POC: Mr. Grant Hays DSN: 821-7324
or Com: (520) 533-7324

STATION: AAC (8 May 1400Z - 2100Z)

Frequency	Emission	Amateur Band
7363.0 kHz	LSB	40M
13910.5 kHz	USB	20M

Location: Lexington, KY
ADDRESS:
HQ 1st BDE, 100th DIV (IT) MARS Station
Barrow Army Reserve Training Center
1051 Russell Cave Pike
Lexington, KY 40505.
POC: Barry Jackson, Com (859) 227-0137

STATION: ABH (8 May 1800Z - 9 May 0400Z)

Frequency	Emission	Amateur Band
3195 kHz	LSB	80M
3360 kHz	LSB	80M
4440 kHz	LSB	80M
4466 kHz	LSB	80M
7360 kHz	LSB	40M
7720 kHz	LSB	40M
8040 kHz	LSB	40M
8094.5 kHz	LSB	40M
14483.5 kHz	USB	20M
14489.5 kHz	USB	20M

Location: Schofield Barracks, HI
POC: CPT Kenneth A. Williams, Jr.
Commander, 396th Signal Company
30th Signal Battalion, 96857
DSN: 315- 1898
Or Com: (808) 438-1898

STATION: AEA (8 May 0700Z - 1600Z)

Frequency	Emission	Amateur Band
6999.0 kHz	LSB	40M
13993.0 kHz	USB	20M

Location: Edingen, Germany
Address:
43rd Signal Battalion
Attn: European Area Gateway Station, AEM1USA/AEA
APO, AE 09014, USA
POC: SGT Hernandez, DSN (314) 370-6020/8137/6091
or Comm: +49-6221-57-6020.

STATION: AIR (8 May 1200Z - 2400Z)

Frequency	Emission	Amateur Band
4026.5 kHz	LSB	80M
6894.5 kHz	USB	40M
7316.5 kHz	LSB	40M
13985.0 kHz	USB	20M
13996.0 kHz	USB	20M

Location: Andrews AFB, DC
Address: 789 CS
Andrews AFB, DC

POC: Mr Van Evans

STATION: AIR-2: (8 May 1500Z - 9 May 0300Z)

Frequency	Emission	Amateur Band
4488.5 kHz	USB	80M
6994.5 kHz	USB	40M
13983.5 kHz	USB	20M
14387.5 kHz	USB	20M
27983.5 kHz	USB	10M

Location: Las Vegas, NV
Address: NELLIS AFB NV
POC: Mr. Ken Mulkey

STATION: AIR-3: (8 May 1800Z - 9 May 0600Z)

Frequency	Emission	Amateur Band
4023.5 kHz	USB	80M
7358.5 kHz	USB	40M
14528.5 kHz	USB	20M
20873.0 kHz	USB	15M

Location: Hilo, HI
Address:
HIANG, 291 CBCS
Hilo HI
POC: Maj Harvey Motomura

STATION: NAV (8 May 1200Z - 9 May 0400Z)

Frequency	Emission	Amateur Band
4010.0 kHz	LSB	80M
7348.0 kHz	LSB	40M
14478.5 kHz	USB	20M
20994.0 kHz	USB	15M

Address: HQ NAVMARCORMARS Radio Station NAV
Cheatham Annex Bldg 117
108 Sanda Ave
Williamsburg VA 23185-5830
POC: Bo Lindfors, DSN 953-4494,
or COM: (757)877-4494

STATION: NAV-3 (8 May 1200Z - 9 May 0400Z)

Frequency	Emission	Amateur Band
4014.0 kHz	LSB	80M
7394.5 kHz	LSB	40M
13974.0 kHz	USB	20M
20997.0 kHz	USB	15M

Address:
NAVMARCORMARS Radio Station
9035 Ocean Drive Suite 3A
Corpus Christi, TX 78419-5234
POC: ITC (SW) Teeter, DSN: 861-5002 or
COM: (361) 961-5002

STATION: NAV-4 (8 May 1200Z - 9 May 0400Z)

Frequency	Emission	Amateur Band
4011.5 kHz	LSB	80M
7376.5 kHz	LSB	40M
14467.0 kHz	USB	20M
21758.5 kHz	USB	15M

Address:
NAVMARCORMARS Radio Station

615 Preble Avenue
Camp Barry Bldg 153
Great Lakes, IL 60088-2850
POC: ITC (SW/AW) Jeffries, DSN: 792-3787
or, COM: (847) 688-3787

STATION: NBL (8 May 1200Z - 9 May 0400Z)

Frequency	Emission	Amateur Band
4041.5 kHz	LSB	80M
7371.5 kHz	LSB	40M
14391.5 kHz	USB	20M
20623.5 kHz	USB	15M

Address:
NAVMARCORMARS Radio Station
PO Box 161 Naval Submarine Base
Groton, CT 06349-5161
POC: ITC Killingsworth, DSN: 694-2061/3716
or COM: (860) 694-2061/3716

STATION: NPL (8 May 1500Z - 9 May 0400Z)

Frequency	Emission	Amateur Band
4003.0 kHz	LSB	80M
7351.5 kHz	LSB	40M
14463.5 kHz	USB	20M
20936.0 kHz	USB	15M

Address: NAVMARCORMARS Radio Station
937 North Harbor Drive
San Diego, CA 92132-5100
POC: ITC(SW/AW) Williams, DSN: 522-1490
Or COM: (619) 532-1490

STATION: NUW (8 May 1500Z - 9 May 0400Z)

Frequency	Emission	Amateur Band
4044.0 kHz	LSB	80M
7381.5 kHz	LSB	40M
13528.5 kHz	USB	20M
20952.5 kHz	USB	15M

Address: NAVMARCORMARS Radio Station
260 W. Pioneer FSC Bldg
NAS Whidbey Island, WA 98277
POC: Mr. Digger O'Dell, DSN: 820-8038,
or COM: (360) 675-2823

STATION: WAR (8 May 1300Z - 2300Z)

Frequency	Emission	Amateur Band
4020.0 kHz	LSB	80M
7504.0 kHz	LSB	40M
13512.5 kHz	USB	20M
20518.5 kHz	USB	15M

Location: Ft Detrick, MD
Address:
Commander, 1110th Signal Battalion
1671 Nelson Street
Ft Detrick, MD 21702
ATTN: MARS Station Bldg 1678
POC: Mr. Larry Solarczyk, DSN: 343-3654
or Com: (301) 619-3654

STATION: WUG-231 (8 May 1300Z - 9 May 0300Z)

Frequency	Emission	Amateur Band
4032.0 kHz	LSB	80M
6826.0 kHz	LSB	40M
14486.0 kHz	USB	20M
14663.5 kHz	USB	20M
20973.5 kHz	USB	15M

Location: Memphis, TN
Address:
USACE Memphis District Office
ATTN: Jim Pogue
Public Affairs Office Room B-202
167 N. Main St.
Memphis, TN 38103-1894
POC" Mr. Jim Pogue, Com: 901)544-4109

PART II. SECRETARY OF DEFENSE MESSAGE TEST VIA DIGITAL MODES. The Secretary of Defense message will be transmitted via digital modes including RTTY, PACTOR, AMTOR, CLOVER and MT63 from the stations listed below, including frequencies, mode, and date/time in Zulu (UTC). All frequencies are listed for center of intelligence. Offset as appropriate for your TNC. (Note: Not all stations may necessarily operate on all the frequencies listed, depending on propagation and available equipment.)

STATION: AAZ (HQ Army MARS and Western Area Gateway, Fort Huachuca, AZ)

Frequency	Mode	Broadcast Date/Time
6988.0 kHz	RTTY	9 May/0230Z
	PACTOR FEC	9 May/0310Z
	CLOVER	9 May/0340Z
24761.5 kHz	RTTY	9 May/0230Z
	PACTOR FEC	9 May/0310Z
	CLOVER	9 May/0340Z

STATION: NAV (HQ NAVMARCORMARS Radio Station, Williamsburg, VA)

Frequency	Mode	Broadcast Date/Time
7346.5 kHz	RTTY	8 May/2340Z
	AMTOR FEC	9 May/0010Z
	MT63 9 May/0040Z	
14480.0 kHz	RTTY	8 May/2340Z
	AMTOR FEC	9 May/0010Z
	MT63	9 May/0040Z

STATION: NAV-4 (NAVMARCORMARS Radio Station, Great Lakes, IL)

Frequency	Mode	Broadcast Date/Time
7375.0 kHz	RTTY	9 May/0240Z
	AMTOR FEC	9 May/0310Z
	MT63	9 May/0340Z
14468.5 kHz	RTTY	9 May/0240Z
	AMTOR FEC	9 May/0310Z
	MT63	9 May/0340Z

STATION: NBL (NAVMARCORMARS Radio Station, Groton, CT)

Frequency	Mode	Broadcast Date/Time
7370.0 kHz	RTTY	8 May /2340Z
	PACTOR FEC	9 May/0010Z
	AMTOR FEC	9 May/0040Z

14393.0 kHz	RTTY	8 May/2340Z
	PACTOR FEC	9 May/0010Z
	AMTOR FEC	9 May/0040Z

STATION: NMH (USCG Radio Station, Alexandria VA)

Frequency	Mode	Broadcast Date/Time
7365.0 kHz	RTTY	8 May/2340Z
	PACTOR FEC	9 May/0010Z
	AMTOR FEC	9 May/0040Z
14471.5 kHz	RTTY	8 May/2340Z
	PACTOR FEC	9 May/0010Z
	AMTOR FEC	9 May/0040Z

STATION: NPL (NAVMARCORMARS Radio Station, San Diego, CA)

Frequency	Mode	Broadcast Date/Time
7350.0 kHz	RTTY	9 May/0240Z
	PACTOR FEC	9 May/0310Z
	AMTOR FEC	9 May/0340Z
14465.0 kHz	RTTY	9 May/0240Z
	PACTOR FEC	9 May/0310Z
	AMTOR FEC	9 May/0340Z

STATION: NUW (NAVMARCORMARS Radio Station, NAS Whidbey Island, WA)

Frequency	Mode	Broadcast Date/Time
7380.0 kHz	RTTY	9 May/0240Z
	PACTOR FEC	9 May/0310Z
	AMTOR FEC	9 May/0340Z
13530.0 kHz	RTTY	9 May/0240Z
	PACTOR FEC	9 May/0310Z
	AMTOR FEC	9 May/0340Z

STATION: WAR (ARMY MARS Eastern Area Gateway Station, Fort Detrick, MD)

Frequency	Mode	Broadcast Date/Time
6988.0 kHz	RTTY (Note #1)	8 May/2315Z
	PACTOR FEC	8 May/2330Z
14440.0 kHz	PACTOR FEC	8 MAY/2345Z
	AMTOR FEC	8 MAY/2400Z

Note #1: 170 Hz shift at 45 Baud.

SUBMISSION OF SECRETARY OF DEFENSE TEST MESSAGE ENTRIES. Transcripts of the RTTY, PACTOR, AMTOR, CLOVER and MT63 receiving test should be submitted "as received". No attempt should be made to correct possible transmission errors. Provide time, frequency and call sign of the military station copied, including name, call sign, and address (including ZIP code) of individual submitting the entry. Ensure this information is placed on the paper containing the test message. Each year a large number of acceptable entries are received with insufficient information, or necessary information was not attached to the transcriptions and was separated, thereby precluding issuance of a certificate. Entries must be sent to the appropriate military address as follows:

a. Stations copying Secretary of Defense message transmitted from AAZ or WAR send entries to:
Armed Forces Day Celebration

CDR. NETCOM/9th ASC
Armed Forces Day Celebration
ATTN: NETC-OPE-MA (MARS) (31)
Fort Huachuca, AZ 85613-5000

b. Stations copying Secretary of Defense message transmitted from NAV, NAV-3, NAV-4, NBL, NPL or NUW send entries to:
Armed Forces Day Celebration
Chief, Navy-Marine Corps MARS
Cheatham Annex Bldg 117
108 Sanda Ave
Williamsburg VA 23185-5830

Testing Location Change

Due to a scheduling glitch, the July 31 VE Test Session will be held at the Essex Library. **This is for July only.**

Contributions Appreciated

The Aero Aerial is always looking for material to put in this newsletter. If anyone has an article or news item that they could submit it will be appreciated.

Submissions can be e-mailed to Frank AC3P at ac3p21220@yahoo.net.