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President's message



Dear members

Most of us were privileged to be a part of Hamfest 2011 which was held in Kochi. It was an extremely well organised and coordinated event with a HUGE gathering of hams and SWL's all having a chance to have an eyeball with their old friends and make new ones. The location and facilities were really great.

The display and sales areas were just like a major exhibition and there was space to move around and see what one could pick up for homebrew efforts and augment one's shack.

Several seminars were held, all of which were well attended, with speakers making a great effort to keep the audience interested on topics which

all of us active hams are looking at learning more about.

ARSI applied for and obtained special suffix for use by all Indian hams in commemoration of India's first Formula 1 race meet at Greater Noida.

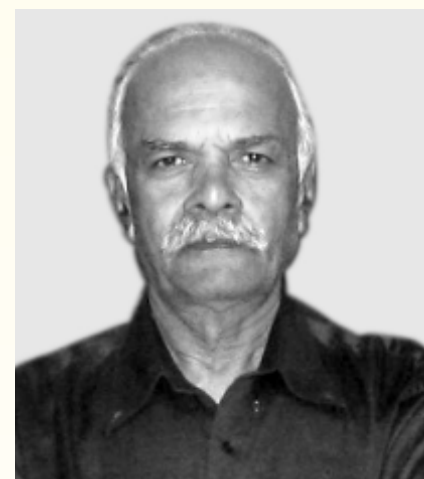
Many hams took an active part in the effort in running this most prestigious event.

The propagation on the HF bands is picking up nicely and we can hear and work stations worldwide after a gap of some months.

ARSI will be conducting several interesting contests on the HF and VHF bands shortly and we look forward to active participation from all over the country

Gopal, VU2GMN

From the Editor's desk



Here's wishing you all a HAPPY NEW YEAR 2012. More and more amateurs are showing interest in working Satellites, so I have included a list of operational satellites along with the details. Band conditions seems to be improving – I expect a lot of activity this year resulting in more news and reports for me to include in the newsletter, Hi Please send articles, news and pictures for publication in the newsletter.. 73

Ganesh VU2TS

Students Building Satellites

CubeSats are a big breakthrough in affordable space science. Miniaturization and standardization - CubeSats measure 10 by 10 by 10 centimeters and weigh just over one kilogram - have substantially reduced the cost of sending experiments to space. The cubes can be joined together - Berkeley's will be a constellation of three, making for a satellite that looks like a long shoe box. And they can be loaded in large groups onto rockets. Their relatively low cost and open-source design ethic has allowed universities to seize on the CubeSat concept to teach students and to conduct research in space.

Using needle-thin solder, tweezers and a very steady hand, Anna Espinal peers through a microscope and attaches capacitors the size of large grains of sand to boards no bigger than a credit card. Each board - she's building eight - requires hundreds of capacitors, connected by circuits Espinal is laying down with more precision soldering. The circuit boards, along with a processor, will function as the brain of a tiny satellite called a CubeSat that an international team of engineering students is constructing in Berkeley's Space Sciences Lab.

Berkeley's CubeSat - officially called CINEMA, or CubeSat for Ions, Neutrals, Electrons, & MAgnetic fields - "will provide cutting-edge magnetospheric science and critical space-weather measurements," according to a description provided by project leader Robert Lin, a professor of physics at Berkeley and former director of the Space Sciences Lab. The project has attracted \$890,000 in funding from the National Science Foundation.

CINEMA is guided by Lin, with daily help

from Immel, mechanical engineers David Auslander and David Glaser and systems engineer Jerry Kim. Both Kim and Glaser worked on the project as students and were hired on to see it through. Having students to do much of the work has been key to keeping costs down. The three-year effort has involved dozens from Berkeley's engineering and physics programs, plus dozens more from the Puerto Rico Space Consortium (Espinal is one) and South Korea's Kyung Hee University. Imperial College London is building the magnetometer and will share the space weather data it captures. Espinal is a good example of what the students contribute and what they receive. "She's the best student solderer I've ever seen," says Immel. In addition to the circuit boards, Espinal is soldering 24 mini solar panels - 10 for Berkeley's CubeSat, the rest for the Puerto Rican and Korean projects.

If all goes as planned, Berkeley's CubeSat will ride up into space on an Atlas rocket fired from Vandenberg Air Force Base in Southern California next June. It is being designed to spend a year in orbit, using a new miniature instrument to measure ions, electrons and neutral particles, and a magnetometer to measure currents generated during electrical storms, and radio the information back to Earth. Espinal arrived from Puerto Rico in July to work on the satellite. Just down the workbench from her, David Clarino, a recent Berkeley graduate in physics and electrical engineering, is figuring out the connections linking the processor, the boards and the satellite's radio and scientific equipment.

A recent graduate of Inter American University of Puerto Rico with hopes to be a researcher on similar projects, Espinal

says her time at the Berkeley space lab has been "a pretty amazing experience, because in Puerto Rico we don't have access to this kind of equipment." It has also allowed her to learn from space-qualified technicians. CINEMA will be one of eight CubeSats riding up on a National Reconnaissance Office rocket next June. Two others are also NSF projects. According to a recent Scientific American article, at least two-dozen student CubeSat missions have been successfully completed and many more are in the works. "At Berkeley, we see an exciting future for CubeSats," says Lin "With the continued miniaturization of instruments, more cutting-edge science will become possible. In addition, CubeSats may provide a modest-cost approach to do science that requires constellations of spacecraft."

View the full story by clicking this Link: rfglobalnet



"Hamfest India 2011, conducted on Dec 10 and 11 at Kochi, was the largest ever gathering of Radio Amateurs in India. Radio Amateurs and SWLs from nook and corners of the country and invited guests from other countries enjoyed the two-day event. The feedback received by the organizers indicate that it was a "dream come true" gathering which has left pleasant memories that might linger for many years...."

Amateur Radio on The International Space Station Ariss

Catalog number: 25544

Launch date : November 20, 1998 0640z (ZARYA module)

Launch sites : Baikonur, Kazakhstan
Kourou, French Guiana
Uchinoura Space Center, Japan
Kennedy Space Center, Titusville, Florida, USA

Status: Operational

Current Active Modes: FM Repeater - OFF

Voice - V/v
BBS - ON
2m APRS ON
70cm Digi ON
SSTV - OFF

Expedition #30 Crew (November 2011 - March 2012):

Commander : Dan Burbank KC5ZSX
Flight Engineer : Anton Shkaplerov
Flight Engineer : Anatoly Ivanishin
Flight Engineer : Oleg Kononenko RN3DX
Flight Engineer : André Kuipers PI9ISS
Flight Engineer : Don Pettit KD5MDT

Available Modes and Frequencies:

Digital/APRS:

Worldwide 2m packet uplink : 145.825 MHz FM 1k2
Worldwide 2m packet downlink : 145.825 Mhz FM 1k2
Worldwide 70cm packet downlink : 437.550 Mhz FM 1k2
Worldwide 70cm packet downlink : 437.550 Mhz FM 1k2

Voice:

Region 1 voice uplink : 145.200 MHz FM
Region 2/3 voice uplink : 144.490 MHz FM
Worldwide downlink : 145.800 MHz FM

Crossband Repeater:

Repeater Uplinks : 1269.650 MHz FM
437.800 MHz FM
145.990 MHz FM - 67.0 PL (Kenwood)

Repeater Downlink : 145.800 MHz FM
437.800 MHz FM (Kenwood)

SSTV Robot 36:

Downlink : 145.800 MHz FM

Mode and Antenna Polarization:

V: Linear

U: Linear

Callsigns:

Belgian : OR4ISS
German : DPØISS
Russian : RSØISS
RZ3DZR
United States : NA1SS
2m Packet Mailbox : RSØISS-II
2m Digipeater alias : ARISS
70cm Packet Mailbox : RSØISS-I
70cm Digipeater callsign : RSØISS
70cm Digipeater alias : ARISS

Official ARISS Webpage : <http://www.rac.ca/ariss>
ISS Fan Club Webpage : <http://www.issfanclub.com>
APRS tracking page : <http://www.ariss.net/>

ISS Daily Crew Schedule:

<http://spaceflight.nasa.gov/station/timelines>

Remember that the crew operates on UTC time.

Tnx: AMSAT

Other satellites that are active:

SO-67 SumbandilaSat

Catalog Number : 35870
Launch Date : September 17, 2009 1555z
Launch site : Baikonur, Kazakhstan

Status : Recovery

Callsign : ZSØSUM

Uplink : 145.875MHz FM tone 233.6 Hz
Downlink : 435.345MHz FM

Mode and Antenna Polarization:

V: Linear
U: Linear

For more information about SO-67:

<http://www.amsatsa.org.za/>

DO-64 Delfi-C3

Catalog number : 32789
Launch Date : April 28, 2008 0354z
Launch site : Satish Dhawan Space Centre, India

Status : Operational
Current Mode : Science Mode - Beacon ONLY

Telemetry : 145.870 MHz

Downlink : 145.880 to 145.920 MHz
Uplink : 435.530 to 435.570 MHz

Delfi-C3 web page: <http://www.delfic3.nl/>

VO-52 HAMSAT

Catalog number : 28650
Launch Date : May 05, 2005 0444z
Launch site : Satish Dhawan Space Centre, India

Status : Operational
Current Mode : U/v - Indian Transponder
Frequencies:
Indian Transponder:

Uplink : 435.220 to 435.280 MHz LSB/CW
Downlink : 145.930 to 145.870 MHz USB/CW

Dutch Transponder:

Uplink : 435.225 to 435.275 MHz LSB/CW
Downlink : 145.925 to 145.875 MHz USB/CW

Indian Beacon : 145.9360 MHz CW

Dutch Beacon : 145.860 MHz 12WPM with CW message

Mode and Antenna Polarization:

V: LHCP

U: RHCP

Official Webpage : <http://www.amsatindia.org/hamsat.htm>

To know what transponder is switched on please listen for the beacon that is active. Each transponder has a different beacon.

SO-50 SAUDISAT-1C

Catalog number : 27607
Launch date : December 20, 2002 1700z
Launch site : Baikonur, Kazakhstan

Status : Operational

Current Mode : V/u

Uplink : 145.850 MHz FM - 67.0 Hz PL tone
Downlink : 436.795 MHz

Mode and Antenna Polarization:

V: Linear

U: Linear

Official Webpage <http://saudisat.kacst.edu.sa/index.shtml>
(not up and running currently)

To switch the transmitter on, you need to send a CTCSS tone of 74.4 Hz. The order of operation is thus: (allow for Doppler as necessary):

- 1) Transmit on 145.850 MHz with a tone of 74.4 Hz to arm the 10 minute timer on board the spacecraft.
- 2) Now transmit on 145.850 MHz (FM Voice) using 67.0 Hz to PT the re-peater on and off within the 10 Minute window.
- 3) Sending the 74.4 tone again within the 10 minute window will reset the 10 minute timer.

Cont.

Other satellites that are active:

AO-27 AMRAD

Catalog number : 22825
Launch date : September 26, 1993 0140z
Launch site : Kourou, French Guiana

Status : Operational

Current Mode : V/u

Uplink : 145.850 MHz FM
Downlink : 436.797 MHz FM

Mode and Antenna Polarization:

V: Linear

U: Linear

Official Webpage : <http://www.ao27.org>

AO-7 AMSAT OSCAR 7 - THIS IS AMAZING!

Catalog number : 07530

Launch Date : November 15, 1974

Launch site : Vandenberg AFB, California, USA

Status : Operational

Current Mode : Alternating between Mode A and B every 24 hrs

Uplink : 145.850 to 145.950 MHz CW/USB Mode A
432.125 to 432.175 MHz CW/LSB Mode B

Downlink : 29.400 to 29.500 MHz CW/USB Mode A (1W PEP)
145.975 to 145.925 MHz CW/USB Mode B (8W PEP)
145.975 to 145.925 MHz CW/USB Mode C (2W PEP)

Beacons : 29.502 MHz CW
145.972 MHz CW
435.100 MHz CW
2304.100 MHz CW

Official Webpage:

http://www.amsat.org/amsat-new/satellites/sat_summary/ao7.php

The AO-7 Logbook and Resource Website:

<http://www.planetemily.com/ao7/>

ARISSat-1 SK



The satellite re-entered sometime early on 4 January, 2012. The last telemetry was received at 06:02:14 UTC.

I stumbled upon something interesting. Courtesy of "Bali & Indonesia On The Net", this service uses data from the US Census and a supplementary list of cities around the world to find the latitude and longitude of two places, and then calculates the distance between them (as the crow flies). It also provides a map showing the two places, using the Xerox PARC Map Server. I found it is better to use the co-ordinates instead of names of locations as many smaller cities are not included in the database.

The distance calculation is done using the "geod" program, which is part of the "PROJ" system available from the U.S. Geological Survey at <ftp://kai.er.usgs.gov/pub/>. It should be quite accurate.

The Link is: <http://www.indo.com/distance/index.html>

VU2TS

CONGRATULATIONS to Prasad VU2PTT on being nominated as a member of the FOC – the First Class Operators' Club #1972. The nomination process does not allow any kind of campaigning or solicitation of support and this happened over a 6-month nomination and election cycle. He was nominated in May and unknown to him seconded by six others from 3 continents including one from UK which is a requirement for nomination.

Founded in 1938, and with its roots, history and management in the UK, The First Class CW Operators' Club (FOC) promotes good CW (Morse code) operating, activity, friendship and socializing via its worldwide membership of approximately 500. Members are active on all HF bands and the character of the club is best expressed in its motto: "A man should keep his friendship in constant repair" - Samuel Johnson (1755)

KUDOS to VU2PAL - Prof M.A. Hipparagi of Belgaum – better known to us as OM PAL...



As of October 2011 he has conducted 6,760 Day nets (HAMBEL) and made 29,7352 QSOs using a simple 40 meter wire dipole antenna.

IARU Region 3 Operating Award

The award is available to licensed radio amateurs and SWLs.

Contacts made after April 5, 1982 are eligible.

QSL cards NOT required. Send certified list of eligible contacts from Log Book.

Cost is US \$4.00.

Eligible countries are those in ITU Region 3 whose amateur societies are members of IARU Region 3.

These are:

Australia, Bangladesh, Brunei, China (PRC), Chinese Taipei (Taiwan), Fiji, French Polynesia (FO8 only), Hong Kong, India, Indonesia, Japan, Korea, Macau, Malaysia, New Caledonia, New Zealand, Pakistan, Papua New Guinea,

Philippines, Pitcairn Islands, Samoa, Singapore, Solomon Islands, Sri Lanka, Thailand, Tonga, Vanuatu, Vietnam.

PLUS -

ONE Country credit from US Territories in the Pacific from Guam, Northern Marianas, American Samoa, Wake Island, Baker Howland Group, as represented by ARRL.

or

ONE Country credit from Chago Archipelago (VQ9), represented by RSGB.

Current total of available 'countries' is 34.

Requirements for Award as from January 1, 1986:

Basic, 7 areas;

Silver Endorsement, 15 areas;
Gold Endorsement, 20 areas.

These to be reviewed as considered necessary by the custodian who would recommend appropriately to the Secretariat.

Awards may be endorsed for any mode or band.

Application to NZART Awards Manager.

Alan Chapman ZL3GX

PO Box 1733

Christchurch 8140

New Zealand

awards@nzart.org.nz

World Flora & Fauna Awards Programme

Ajoy- VU2JHM has been organizing WFF activity every year, and the last time he was visiting me I came to know that my own QTH B.R.HILLS was #100 in the list of WFF locations in India.

Wildlife Week has been celebrated every year in *India* from 1-7 October for the last 56 years. Ajoy suggested we operate a special event station VU2WFF from my QTH this year. Sadly, the no-objection from the Forest Department did not arrive in time for the special call to be issued by the authorities, so we decided to operate VU2TS/FF – my station being located at WFF#100.

Lakshman VU2LX and Arasu VU2UR



came over on the 12th October and we shared the simple setup at VU2TS – the conditions during most of daytime was appalling; however this was compensated by band openings on 10,17 and 15 meters by late afternoons. We managed to log 450 stations at the end of the second day. (If we had not spent one hour or more chasing the elusive T32C/Christmas Island Dxpedition, we might have reached 500, Hi) Oh! Yes, we nailed T32C.

That was fun!



Arasu VU2UR

Lakshman VU2LX

Worked VU Flora Fauna Award (W-VUFF-A)

India is very rich in its wealth of Flora and Fauna from the tropical area to the Cold Himalayan Mountain ranges. India has over 600 sites covering National Parks, Game sanctuaries, Game reserves etc.,. The list published by *WFF44.com* is more than adequate for the time being. But, if some Indian site, not in the *WFF44.Com* database, is activated, please mention all details with copy of QSL card, for acceptance.

A few of the VUFFs have already been activated. The first ever activation was with the call AT8WFF from Bannerghatta National Park, VUFF-005, near Bangalore City. Subsequently other sites like Bannerghatta NP (3rdtime), Bandipur NP and Mudumalai GS were activated by VU2UR/ FF. In addition, the Maitri Antarctic Base of India (VUFF-099) has operators like VU3BPZ. No time limit for the QSOs from Indian Antarctic Bases. VU2TS is located on BR Hills (VUFF-100) therefore VU2TS QSOs are valid from 01 Jan 2000 for VUFF-100.

Thus, till 31.Dec 2009, the following

VUFF are activated: VUFF-005 (thrice), 004, 055, 099 and 100.

The award is available for having QSOs with at least three different VUFF locations activated so far. A different call activated from the same VUFF, counts as a separate one. Thus, if you have worked AT8WFF and VU2UR/FF from VUFF-005 that qualifies you for two and one more QSO with a different VUFF or VU2TS is required for claiming the Award.

GCR listing or Awards Manager of your National Society can certify.

The Award has no date of QSO limitation. It is EASY to claim this award.

The fee for the award is : 3€ or 5 US\$ or 7 IRCs (latest)

€ or \$ must be sent as a Bank Demand Draft in favour of B.L.Manohar at Bangalore. Fee in any form must be sent to B.L.Manohar VU2UR, MIG-6, 80 Feet Road, Kengeri Upanagara, BANGALORE 560060 INDIA.

The award is only available in "pdf" format, sent to your E-mail Id only.

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One Day AJD Award

Issued September 15, 2011
JARL Himeji Club

This year, at its 55th anniversary, "ONE DAY AJD" award rules have been renewed for Simplified Application and harmonization to JARL Award rules.

No GCR is required and the written oath with your signature is sufficient for application.

The award can be issued with additional endorsement for single band, single mode, Satellite communication, EME and QRP(QRPp) etc.

1. Requirement: QSO with stations located in 10 Japan Districts from 0 to 9 within 00:00 – 24:00 UTC or JST (Japan Standard Time) and to have these 10 QSL cards from them.
2. (Note: The District is shown in the third letter of Japanese prefixes except for the stations with 7K, 7L, 7M and 7N prefixes those are all counted as District 1.)
3. Application: To Use an application form similar to JARL Award and attach the QSL (Cards) list with 12 IRCs.

(Sample JARL application form is available at http://www.jarl.or.jp/English/4_Library/A-4-2_Awards/sample-form.doc)

*Similar endorsements are available as specified in JARL Award rules.

(Note) Electronic QSL CARDS (eQSL) are also acceptable.

4. Effective Date of QSOs: Oct. 1, 2011 or later
5. Postal address for application: JARL Himeji Club P.O.B NO.6, 670-8691 Japan

6. Award Manager: Mr. Kiyoshi Takahashi (JA3NJB)
E-mail: ja3njb0059@yahoo.co.jp

2. "Special ONE DAY AJD" Award will be issued for commemoration of renewed rules.

To the applicants with top ten shortest completion time for "ONE DAY AJD", in the period of Oct.1, 2011 to Jan.31, 2012, "Special ONE DAY AJD" Award will be issued and a novelty will be provided to all top ten finishers. We expect that many stations to participate in this special award.

(Details)

1. Purpose: For increase of Amateur Radio activity and promotion of "ONE DAY AJD" Award.
2. QSO Period: From 00:00 Oct. 1, 2011 to 24:00 Jan. 31, 2012 UTC (for DX station) or JST.
3. The deadline for application: Within above period, "ONE DAY AJD" is to be completed and the application should be received by May 1, 2012. No particular description is needed for "Special ONE DAY AJD" Award. It is a competition to achieve "ONE DAY AJD" in the shortest time. To the top ten shortest time achievers of "ONE DAY AJD" will get this Special Award.
4. Announcement and Shipping: "Special ONE DAY AJD" Award will be shipped around June 2012 and result will be announced by Japanese Ham Radio Magazine, JARL News, JARL Himeji Club Home Page (under planning).

[I have obtained the AJD Award. VU2TS]

The Malabar Repeater Club was officially inaugurated on 17 Nov. 2011 by the Superintendent of Police, Mr. Anoop Kuruvila, an avid SWL and well aware of the role of Hams in Disaster Management.

VU2MWW – 145.675 – 600kHz



In the morning session we had a presentation from Associate Prof. Amal, from the Institute of Land Disaster Management (ILD, Trivandrum). Then a wonderful session of SDR Demo/talk by OM VU2DEV, Prabhu Dev. Hams from Kerala, Mangalore and Bangalore graced the occasion. The SWLs did a splendid job of making the arrangements for occasion.

A Morse Code For Human Cells

From: Science Daily

Morse code is a simple, effective and clear method of communication and now scientists believe that cells in our body may also be using patterns of signals to switch genes on and off. The discovery may have major implications for the pharmaceutical industry as the signaling molecules that are targeted by drugs may have more than one purpose. The number of 'dots and dashes' being used by each signal could have different purposes, all of which could be modified by a drug.

The researchers, funded by the Biotechnology and Biological Sciences Research Council (BBSRC) and working at the Universities of Liverpool and Manchester and the Royal Liverpool Children's Hospital, in collaboration with scientists at AstraZeneca and Pfizer, have studied transcription factors, the signaling molecules inside cells that activate or deactivate genes. They found that the strength of the signal is less important than the dynamic frequency pattern that is used.

"The timing of the repeating signal is essential for its interpretation. It seems that cells may read the oscillations in level of transcription factors in a similar way to Morse code."

The tap code is a way to encode messages, letter by letter, in a very simple way and transmit it using a series of tap sounds, hence its name. It has been commonly used by prisoners to communicate with each other. The method of communicating is usually by "tapping" either the metal bars, pipes or the walls inside the cell.

Tap code

	1	2	3	4	5
1	A	B	C	D	E
2	F	G	H	I	J
3	L	M	N	O	P
4	Q	R	S	T	U
5	V	W	X	Y	Z

The tap code table

The tap code is based on a 5x5 grid of letters, representing all the letters of the Latin alphabet except K (C is used to represent K). Each letter is communicated by tapping two numbers: the first designated the row (horizontal) and the second designated the column (vertical). The letter "X" is used to break up sentences. The tap code requires the listener to only discriminate the timing of the taps to isolate letters. For example, to specify the letter "A", one taps once, pauses, and then taps once again.

Or to communicate the word "WATER", the cipher would be the following (the time between each pair of numbers is smaller than the one between two different letters):

W	A	T	E	R
(5,2)	(1,1)	(4,4)	(1,5)	(4,2)
.....

Because of the difficulty and length of time required for specifying a single letter, prisoners often devise abbreviations and acronyms for common items or phrases, such as "GN" for Good Night, or "GBU" for God Bless You.

By comparison, Morse code is harder to send by tapping or banging because Morse requires the ability to create two different sounding taps. A Morse novice would also need to keep a cheat sheet until he remembers every letter's code, which his captors would likely confiscate. Tap code can be easily decoded in one's head by mentally using the table.

The origins of this encoding go back to the Polybius square of Ancient Greece. As the "knock code", a Cyrillic alphabet version is said to have been used by nihilist prisoners of the Russian Czars.[2] The knock code is featured in Arthur Koestler's classic 1941 work *Darkness at Noon*.

United States prisoners of war during the Vietnam War are most known for having used the tap code. It was introduced in June 1965 by four POWs held in the Hoa Lo "Hanoi Hilton" prison: Captain Carlyle "Smitty" Harris, Lieutenant Phillip Butler, Lieutenant Robert Peel, and Lieutenant Commander Robert Shumaker. Smitty Harris had heard of the tap code being used by prisoners in World War II and remembered a United States Air Force instructor who had discussed it as well.

In Vietnam, the tap code became a very successful way for otherwise isolated prisoners to communicate. POWs would use the tap code in order to communicate to each other between cells in a way which the guards would be unable to pick up on. They used it to communicate everything from what questions interrogators were asking (in order for everyone to stay consistent with a deceptive or bogus story), to who was hurt and needed others to donate meager food rations. It was easy to teach and newly arrived prisoners became fluent in it within a few days.[5][6] It was even used when prisoners were sitting next to each other but not allowed to talk, by tapping on another's thigh. By overcoming isolation with the tap code, prisoners were able to maintain a chain of command and keep up morale.

Rotor Torque

By Jim, W4GFX

How much rotor torque do you need to start, turn, and stop a yagi or quad antenna(s)? The only answer given by many rotor manufacturers is in square feet. "Rotor BigScrew will turn up to 25 square feet." Intuitively you know that is not a complete answer - there is no reference to boom length, wind speed, or weight. We want to know if we can turn the antenna(s) in the wind, not the square footage of the antenna(s).

The Forces

A rotor has two sets of forces to deal with: 1) axial forces-the weight of the antennas and mast, downward (which this note will not deal with), 2.1) the rotational forces arising from the start/stop (dv/dt) acceleration of the antenna, and 2.2) the force of the wind on an antenna which is not wind neutral. [Wind neutral means all the wind rotational forces on the antenna sum to 0, regardless of position. A neutral antenna will not turn, or windmill, from the wind, no matter what its position, even when unrestrained, and can turn with less rotor torque.] A wind neutral antenna is approximately the same as no wind

The Antenna

Assume our boom weights 40 lbs., is 32 feet long, and the antenna weighs 80lbs., with a turning radius of 27 ft.

HAMFEST 2011



The Physics (for the few)

The rotational moment of inertia of an antenna is $I = wL^2/12$, where w = weight of the boom, and L = boom length. (This uses the simplifying assumption that the weight is evenly distributed along the boom). The rotor torque required to accelerate from stop to a speed of w radians in t seconds (remember a radian equals about 57.30°) is $M = Iw/tg$, where $g = 32.2 \text{ ft/sec}^2$. Substituting, and simplifying, $M = wL^2/(307.5t)$ inch-pounds. If we let $t = 1$ second, it drops out of the equation; we can wait 1 second to get up to full speed. The torque requirement is 133 foot-pounds, or 1,600 inch-pounds, assuming a wind neutral antenna. This basic torque requirement is not related to the square foot measurement of the antenna, or the wind speed.

If the antenna is not wind neutral, we must add the torque of the wind acting on this antenna. Let's assume we have 1,600 inch pounds of wind torque opposing rotation. If we add the basic torque to rotate the antenna, and the wind torque, we need 3,200 inch pounds to start the antenna. This exceeds the maximum start torque of many rotators. Here, square feet do make a difference.

Quick and Dirty (for everyone else)

Rotor manufacturers have begun to use "Effective Moment," or "K-Factor," to compare the rotational power needed. It is the weight of the antenna (not just the boom) multiplied by the turning radius of the antenna. The effective moment of all antennas on the mast are summed. This same antenna would have an effective moment of 80 lbs. x 27 ft. (weight and turning radius assumed) = 2,160 ft-lbs. K-Factor (Remember, this product is not the same as torque.) Looking at Yaesu's rotor line, we would use a G-2800 as the G-1000 is just under-size.

The effective moment is a useful comparative measurement. Some manufacturers do list torque specifications. When buying your next rotor, have a look at the start torque, full load torque, stall torque, braking torque, coasting torque, and effective moment. You will be an informed buyer, can make good comparisons, will know your needs, and won't have to wait for a windless day to turn your antenna.

Be Kind to Your Rotator

Before you install your antenna(s) do two things: 1) test it for weight balance about the mast (just like a teeter-totter), and 2) be sure it is torque balanced. We will examine how to do torque balancing in another note. Commercially made antennas do not often come out of the box weight and torque balanced.

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Lighthouse Activation by Tara



The Lighthouses are located in the Union territory of Daman, in Gujarat, grid location ML60jj.

The Daman Ganga Lighthouse, IND.128 and the Old Lighthouse IND 129 were activated between the 23rd and 26th of December 2011 by the members of the Thane Amateur Radio Association.. The participants were VU2SWS, YL Sarla Sharma and VU2IZO, Milind (Micky) Korde.

An all band MYA 30 HF antenna and an 80 meter home brewed dipole were installed on a collapsible Spider beam fiberglass pole. A four band Hy gain vertical antenna with radials was installed close to the sea. For VHF a NAGARA / 9DB Gain was installed on the parapet wall. The radios used were I COM 706MkIIIG and KENWOOD TS 590 & VHF I COM V8000. Laptops were used for logging.

VU2DSI-Duttal operated with a special call-sign AU2JCB between the 19th of November and 4th of December 2011, to pay homage to the great Indian scientist Acharya Jagadish Chandra Bose, who is recognised as the 'Father of Wireless Communication'. More than 3,500 contacts were logged.

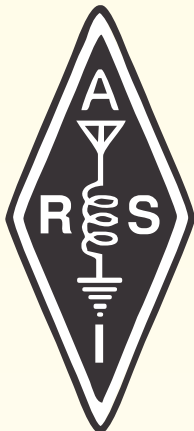
Contacts were made both in SSB and digital mode - all over Europe and America especially on the 10, 15 and 40m bands. The shack was visited by officials of the Administration of Daman and there was a continuous stream of Tourists who were curious to know about Ham radio.

In all it was a successful attempt at enjoying the hobby and its connection to Lighthouses. The Thane Amateur Radio Association plans to organize many such outdoor events in the near future.

If you would like to see more pictures of the event, the link is

<https://picasaweb.google.com/lh/sredir?uname=103274953203149247636&target=ALBUM&id=5690729870968044881&authorkey=Gv1sRgCJ3wgqjkt-OnKQ&feat=email>





I.T.U. ZONES AND REGIONS

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