Ham RADIO News

Newsletter of the Amateur Radio Society of India (Indian Affiliate of IARU)

October 2019 Issue

Pics from B.A.R.C's Ham Awareness Programme in Bengaluru – July 2019

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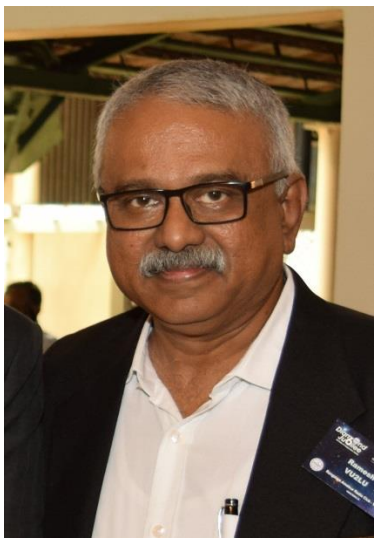
President's Message



After assuming office as the President of ARSI following the AGM on 28 July 2019, I realised that I have put my feet in to big shoes. OM Gopal Madhavan VU2GMN was directly instrumental in bringing about many positive changes helping the ham community with his pursuant and frequent visits to the capital. The most prominent among these changes are the waiver of the MHA verification before issuing the ticket to candidates (from most parts of India) and the waiver of seeking permission from WPC to operate away from the licensed location, recently in June 2019.

Following the amendment in ARSI byelaws during the recent AGM, the managing committee has nominated OM Madhavan VU2GMN as the Chairman of ARSI, to seek his continued guidance and mentorship.

The Secretary, ARSI, Govind Girimaji VU2GGM and myself visited Delhi to meet the WPC officials during the 3rd week of September 2019. All the senior officials including the Member-Technology, Wireless Advisor, Addl. WA, Deputy WA and the AWA received us courteously and took time out to hear about our pleas and issues relating to Amateur Radio licensing and band-plan. During these meetings, we discussed about few pending issues from our earlier requests towards which we are expecting some positive outcome shortly.

We are seeing a surge in new ARSI memberships in the last few months which is a very positive sign as members are seeing value in associating and supporting us in our activities.

The launching of the Amateur Radio Emergency Communication (AREC) during August 2019, a new wing of ARSI to coordinate and assist during natural disasters and calamities, has received huge response from hams across the country. Though

ARSI always had a Disaster Communication Coordinator who has been coordinating during calamities, this new initiative will bring in volunteers from all parts of the country, train and equip them with emergency grab kits to effectively handle communication in the regions nearest to them.

Monitoring the Amateur bands for intruders in the region is important and ARSI has been doing this and reporting to IARU-R3. OM Manohar Arasu VU2UR has done this for many years as the ARSI Monitoring Coordinator and has regularly filed reports of intrusion and pirate stations. Upon his wish to retire from this role due to personal reasons, he is now mentoring OM Sanil Deep VU3SIO who has been nominated as the Monitoring Coordinator. I wish to thank OM Arasu VU2UR for his contributions to ARSI on behalf of all the members.

Looking forward to meeting you all in Kanyakumari, during Hamfest India 2019.

73

Ramesh Kumar VU2LU

From the Editor's desk

The relaxation of the licence rules permitting us to establish stations away from the home QTH for the purpose of demonstrations, experiments and education has been really encouraging.

By holding such tests in cities, we will come to know the range of our VHF stations and also the coverage of repeaters if any, and that knowledge will come in handy in case of an emergency. We will know which are the best locations in the city for setting up of emergency stations controlling a network. At the same time, newly licenced amateurs will get some experience of erecting temporary antennas, setting up a station and operating a net.

In July, The Bangalore Amateur Radio Club organized an ‘awareness programme’ by setting up stations in the four corners of the city, educating the public about this unique scientific hobby.

The Pune Hams and Amateur Radio Club held a VHF mobile test during August.

The Qatari geostationary satellite launched in November 2018 is parked in a 26° East longitude. Its nice to see more and more amateurs gearing up for contacts through this satellite which offers 24/7 DX contacts.

We are in deep solar minimum right now, beginning Cycle #25. As I am writing this, the Sun was spotless for a total of 196 days, with the sunspot number remaining most of the time at zero. Predictions are that it may last for years.

Hope you enjoy this issue of Ham Radio News!

73, Ganesh VU2TS

AREC - AMATEUR RADIO EMERGENCY COMMUNICATION

Amateur Radio has always been in the forefront whenever a disaster strikes, be it a flood, a cyclone, an earthquake or any kind of natural or man-made situation. Amateur Radio is internationally accepted as the MAIN means of emergency communications and has proved it is invaluable in such situations. Indian hams have always rallied round in every possible emergency and their efforts have always been lauded.

AREC is the public service arm of Amateur Radio Society of India. Many hams get involved in providing communications for natural calamities such as floods, cyclones, earthquakes, landslides and man-made disasters. The AREC will be activated when basic communication system fails in a particular region.

The word 'Amateur' in AREC typically means that we are unpaid volunteers with a goal to achieve the highest standards in providing emergency communication. Members are drawn from every walk of life and profession as long as they are licensed Amateur Radio Operators.

Members in AREC

All Amateur Radio operators are eligible to volunteer as a member in their region. Regional AREC coordinators will be nominated to the group on the recommendation of the Chief Coordinator.

To volunteer as a member of AREC please submit your details using this form: ARSI-AREC Volunteer Form

AREC Structure

The Chief Coordinator is the national head of AREC assisted by two Deputy Chief Coordinators. The Chief Coordinator and his deputies are responsible for:

1. The general conduct of the organisation, and training of ARSI-AREC volunteers on a regional and national basis.
2. Coordination of ARSI-AREC with the Govt. Agencies like NDMA, NDRF & other Voluntary Organisations

3. Liaison with the State Director of Civil Defense.
4. Obtaining approval from local administration.
5. The monitoring and clearance of AREC frequencies.
6. Allocation of ARSI Grab-Kits to AREC Regional Coordinators at various locations that are disaster prone in different regions.
7. Coordination with Volunteers, Regional AREC coordinators, Ham Radio Clubs and Organisations.

The Chief Coordinator is appointed by the ARSI Managing Committee, annually.

The Deputy Chief Coordinators are also appointed by the ARSI Managing Committee on the recommendation of the Chief Coordinator.

Before any emergency or in the event of an emergency – What do I do?

Some suggestions for ham radio operators:

1. Know your Club officials' names and phone numbers and keep them handy.
2. Know your ARSI-AREC regional coordinators and volunteers
3. Be familiar with your repeater services and frequencies, with a knowledge of the service area.
4. The AREC Calling Channel is 3900 KHz LSB / 7100 KHz LSB. Also available for assistance are your local VHF/UHF repeaters.
5. If necessary, break-in on either HF or VHF/UHF nets, with identification and call for assistance. Maintain a log of all activities and communication.
6. In the event of an emergency communication requirement contact your nearest AREC Regional Coordinator.
7. ARSI-AREC will provide and update the list of Volunteers, AREC Regional Coordinators, Deputy Chief Coordinators and Chief Coordinator information on the web page.
8. Participate in field-days, hill-topping and the contests organized by ARSI so that you gain experience and are ready to set up a station and go on air with short notice.

KERALA

WHEN ALL ELSE FAILS, THERE IS AMATEUR RADIO

The Malabar Amateur Radio Society proved this by setting up a repeater station connecting Kavalappara with the Nilambur Taluk Office and the Collectorate in Malappuram early in August when there was incessant rainfail causing flood and landslides. All mobile phones and even the police wireless system had failed. Tajuddin VU2DJ co-ordinated the efforts. The others who took part in the operations included Ashraf Kappad (VU3MTY), SHAJEER (VU3EUB), SHANAVAS (VU3EUE) & Dr. Anwar (VU3LMW).

TAMIL NADU

The South India Amateur Radio society conducted its Annual Field Day on September 14th and 15th at Kanchipuram, about 60 km from Chennai, TN. The first station to go on the air was an experimental QO-100 (Geostationary satellite) setup manned by VU2UAV, OM Kavi.




The HF station setup was an ICOM IC7300 running mid to low power via a tuner. Even though an Icom IC718 was available for a GOTA (Get On The Air) station, the idea was abandoned as the conditions were very poor for the higher bands on SSB, shifting the GOTA operation to the morning. **More importantly, this session introduced participants who had never been on HF a chance to make a HF contact with an Elmer by their side.**

A very resourceful team led by VU2ABS, OM Aravind setup a Butternut vertical for HF operation. There was also a parallel effort by a few amateurs and swls to put up a multiband trap dipole. There was also a Vertical setup by VU3PQN, OM Clement.

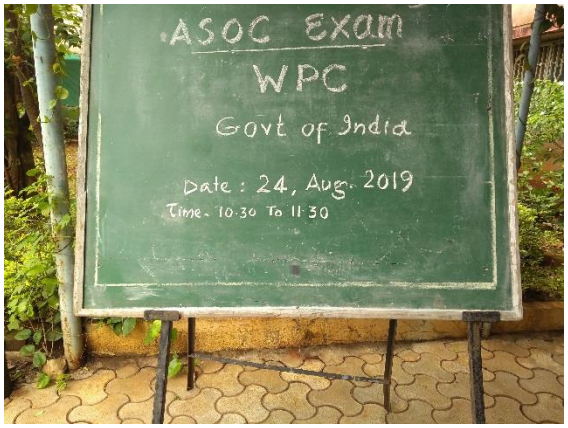
The participants took turns to learn about the antennas, equipment and operation procedures on HF, especially for DXing.

Tnx: Aravind VU2ABS

SATARA, MAHARASHTRA

For the first time, the ASOC exam was conducted by **Satara Amateur Radio Association (SARA)** on 24th August 2019 at the Ocean cadet academy in Pune.

More than 30 aspirants from Satara & Ahmednagar districts appeared for the exams, that included doctors, navy cadets, engineers, scouts - guides, pilots and self-employed young students.



Many of the participants were tutored by OM Rohit Bhosale VU3LWD of the Satara Amateur Radio Association. Capt. Gopi Shetty & the Ocean Cadet academy team had kindly made all the necessary arrangements with the WPC to hold the examinations.

Rohit Rajendra Bhosale VU3LWD
Secretary
Satara Amateur Radio Association +91-9766923444

PUNE, MAHARASHTRA

PUNE HAMS AND AMATEUR RADIO CLUB-VU2PHQ - VHF MOBILE TEST Activity

Pursuent to the WPC circular on mobile operations, the PUNE HAMS AND AMATEUR RADIO CLUB organized a VHF mobile TEST event on Sunday 18th August 2019.The objective of the exercise was to get the members to install a mobile vhf set in their vehicle and to have a field experience of the VHF propagation. Besides it would also enabled each team to check

1. The PUNE HAMs City Repeater's coverage

2. Mobile point to point simplex coverage &

3. To enable each team to test their mobile setup & mobile capabilities in case it is needed for EMERGENCY COMMUNICATION.

There were five mobile stations and four fixed stations and Sixteen licensed Radio Amateurs and two SWLs from the club participated in the event .

The groups were given:

- AN OUTLINE OF THE EVENT.

- SAFETY MEASURES

- ROUTES FOR EACH TEAM.

- PROTOCOL TO BE FOLLOWED AND THE METHOD OF PLOTTING THEIR REPORTING POSITION ALONG THE PRESET ROUTE.

The mobile teams comprising of licensed amateur radio operators with their tested radio gear started from locations that are in the periphery of Pune city and travel along a predetermined routes to reach the club station. The Net controller operated the Club station VU2PHQ, coordinated event and exchanged signal reports and recorded latitude and longitude positions reporting team positions of each reporting teams. On reaching the Club Station the teams met for debriefing that was followed by lunch.

The overall feedback from all the teams was that the objectives of the event were achieved and it was a great learning experience for each of the participants.

Basis on this experience, the club will be planning similar activities to help the Radio Amateurs to understand propagation and operating challenges in various radio bands so that when needed they will have sufficient experienced to assist in emergency communication.

The **PUNE HAMS EYEBALL** meet was held on Sunday, 4th August 2019 at the **PUNE HAMS AND AMATEUR RADIO CLUB- VU2PHQ** in Pune Cantonment.

Although some of the bridges in Pune were closed due to the continuous rain and the release of water from the Dams into the rivers that flow through the city causing traffic disruptions, there was a fairly large gathering of Amateur Radio enthusiasts at the meeting.

VU3RSB Sarath Babu travelled all the way from Vijaywada to attend the PUNE HAMs EYEBALL QSO. As an ARSI EC member he addressed the members of the club, discussed their concerns and also asked for suggestions. He also urged the Amateur Radio enthusiasts to come and participate in the **2019 HamFest India** at Kanyakumari.

During the interaction Sarath Babu shared his experiences with the hobby which was very enriching for the newcomers. Kuniaki Arai - JL1STZ from Tokyo who was also there for the EYEBALL QSO, shared his experiences with the members.

Members of the club have been carrying out some VHF tests using low power transmission to study propagation between stations and the effects of reflected signals. The observations were shared with the group followed by a discussion.

Those who attended the meeting shared details of their experiences in ham activity during the past month and about their ongoing projects on the bench.

As usual there were some newcomers who wanted to know more about Amateur Radio and about the ways to get a license in order to pursue this hobby.

At the end of the meeting both Sarath Babu & Kuniaki Arai were each presented with the special PUNE HAMS AND AMATEUR RADIO CLUB CAP. This was followed by snacks, one to one interaction and fellowship.

The Club has also decided to dedicate one more day in the month for completion of incomplete technical projects or to initiate new projects. To kickstart this initiative a group met on Saturday 3rd August 2019 to look into problems that were being faced by those who had already assembled their Ubitex radios outside the Ubiex workshop that the club had conducted last year, to help those assembling new kits and to incorporate the audio interphase that was build during the Audio Interphase for Digital communication workshop into the Bites Radios.

Udaya Patil /VU2UPQ

On the same day, 4th August, the Eyeball QSO of Pune Hams was attended by 19 Hams and SWLs in spite of heavy rains. There were 6 engineering students showing keen interest in Ham Radio and started preparations for ASOC.

The meeting started with fellowship and interactions followed by Tea and snacks.

The guest speaker **SWL Sudhir Phakatkar** *(who recently cleared ASOC exam)* gave excellent presentation on ***Appolo11 mission***. It was 50 years ago, and a very exciting story of Moon Landing of humans. He has written a Marathi book on the subject, which

was released last week by daily Sakal. Most if the Hams and SWLs purchased the book.

Fifty years ago, the electronics was just switching over from vacuum tubes to Transistors. The Industry was learning quality and reliability aspects through Juran and Deming. The cold war of USSR and USA was in full swing for space science.

Sudhir took an overview of space science from **1957 Sputnik to India's Chandrayan2** and progress made by humans in Space Technology through power-point images. The Radio communication system between Eagle and Spacecraft and ground station at NASA was explained.. VU2VPR OM Vilas shared his memory of crating 1/24 scale size Eagle lander which was appreciated by **late SL Kirloskar, Industrialist**.

There was an ISS pass on that day at 12:38 PM and was demonstrated by OM Kaustubh VU3UJO and Pranit VU3IMB under the guidance of Mangesh VU3OUM. It was most exciting event for students who all received the SSTV pictures from the ISS - on their mobile phone.

The meeting ended with lot of interactions, selfies and group photo.

Tuesday 16th July, Arya VU2VAB and myself spent quality time with students of The Army Institute of Technology (AIT), Alandi Road, Pune.

Introduction to Ham Radio and formation of Ham activity in campus was main focus during orientation program for first year students. The participants found it very informative.

AIT is the only Engineering collage in India exclusively for the wards of Defence Personnel. It was a pleasure to note that the students are highly disciplined.

We both enjoyed interacting with the youngesters. The college students run *__Raaga Web Radio__* for Entertainment as well as study. It is a very interesting project. They have studio for recordings

More than 350 students attended the Ham Radio session

73, Vilas VU2VPR

UDUPI – DAKSHINA KARNATAKA

Members of **Mangalore Amateur Radio Club (VU2RDO), MIT Ham Club Manipal (VU2MHC) and NITK Ham Club Surathkal (VU2REC)** participated in the joint Mock Drill (for flood) that was organized by Udupi district's Disaster Management cell on 6th July 2019. The drill was conducted on the banks of the already swollen Haladi river in Balkur village of Kundapur Taluk in Udupi district.

On specific request from the district administration, Ham Radio operators from these three clubs set up stations at the Command Post, HQ Control room and 4 other satellite locations to help coordinate the activity.

The drill involved rescue operations by the very efficient NDRF (National Disaster Relief Force) team of drowning victims resorting to speed boats and deep water diving. Search and rescue operations using other boats were also done by Home Guards and Fire rescue officials.

Rescue operation in progress

Chandra VU2RCT and Soma VU2NJN manned the HQ Control Room station at the DC's office in Manipal.

Ro VU2RDQ and Sri VU2SBJ manned the Command Post station at the mock drill site.

Ganga VU2TAO manned the mobile NDRF unit

Paramesha VU3VXT and Mahesh VU3LMP manned the mobile Ambulance units.

Vishnumurthy VU2MTT manned the mobile Fire Tender station and

Abhai VU2ABU manned the Triage area on the site where casualties were being brought in. Off-site support was provided by Ashwin VU3FDU, Majid VU2QDX, Manu VU3BUN and Laxminidhi VU2WFN for helping with the set-up and coordination.

Triage area attending to medical casualty

A temporary VHF repeater was set up at VU2MHC Club station in Manipal to cover the relevant region, and VHF was the primary band of operation during the drill. A brief demo was also provided to the District Administrative Authorities (the DC and SP) to introduce our activities. The HQ (DC office in Manipal) is located about 35 kms from the mock drill site and was covered by a VHF repeater. The hams participating on the various sites had made themselves available at very short notice on a weekday.

Report by Sri - VU2SBJ,
President, Mangalore Amateur Radio Club,
Manipal

Diamond Jubilee

60 Years of Happy Ham Radio

The members of the **Bangalore Amaeur Radio Club VU2ARC** celebrated the Diamond Jubilee of the club on Sunday, 14th July 2019 at the Century Club, Cubbon Park, Bengaluru.

The organizing committee comprising of member-volunteers, headed by Ramesh Kumar VU2LU as the Convener of the Celebrations and Chaired by Sampath Kumaran VU2YZ, was set up to oversee the activities and conduct of the Diamond Jubilee Celebrations by the Managing Committee of BARC. The VHF and HF Contests were conducted comemorating the Diamond Jubilee earlier during the year.

AU60BARC, a special callsign was kept active for 3 months from April – June 2019 to mark this occasion.

The celebrations at The Century Club, Bengaluru on the 14th of July was attended by over 200 members and their family. The Master of Ceremonies, Ramesh Kumar VU2LU also the Convener of the Organizing Committee welcomed the gathering and invited the Chairman, Chief Guest and the special invities on to the dias. Kumari Anika, daughter of Krishna Kumar VU3UNO recited the invocation to begin the function. The traditional lamp was lit by the members on the dias marking the inauguration of the function..

Key Note Address was delivered by Shri. Sampath Kumaran VU2YZ, Chairman, Organising Committee. Shri. Vijay Kumar Yadav VU2YVK, President, BARC addressed the gathering followed by Shri. K. S. Chandrashekar VU3HBJ, Vice President, BARC.

The BARC Secretary Kiran Kumar VU3PKE, addressed the gathering speaking about the recent achievements of the club and its future plans and prospects.

A brief history of BARC was presented by Shri. Govind Girimaji VU2GGM. This was followed by honouring veteran hams/members of BARC by garlanding and presenting them mementos. Shri. T. S. Ganesh VU2TS; Shri. R. J. Marcus VU2VTM; Dr. V. S. Kukillaya VU2VK; Shri. Somasundaram VU2RO; Dr. K. S. Sangunni VU2SF; Air Comdr. V. Subramanian VU2UV; Shri. Prasanna Raghavan VU2WP; Shri. Ramanujam VU2RQ; Shri. Hari Rao VU2GZ; Shri. B. L. Manohar (ARASU) VU2UR; Shr. Lakshmanan VU2LX.

Special Invitee to the function, President of ARSI Shri Gopal Madhavan VU2GMN addressed the gathering.

Special Invitee to the function, Dr. Justice H. B. Prabhakara Sastry (VU2QFZ), Judge, High Court of Karnataka, addressed the gathering.

Special Invitee to the function, Dr. Shivakumar (VU3FDB), Vice Chancellor, CMR University, Bengaluru, addressed the gathering.

The Chief Guest, Dr. N. Udaya Shankar, Professor, Dept. of Astronomy & Astrophysics, Raman Research Institute, Bengaluru, addressed the audience and did an interesting technical presentation on Radio Astronomy.

The invitees were garlanded and presented with Mementos following their talk.

The Chief Guest and the Special Invitees distributed prizes to the winners and participants in the VHF & HF Contests.

Gopal VU2GMN and Ramesh VU2LU felicitating Ramanujam 'Jam' VU2RQ

The vote of thanks was presented by BARC GC Member, VU3IMV Venkatesh Subbarao. He thanked the members on the dias for being present and making the occasion grand and successful.

He thanked the operators of the special callsign AU60BARC - Rajesh, VU2RPS; Sarath VU3RSB; Prakash Srinivasan VU2IBI; Ram Mohan VU2GRM; Vijay Kumar Yadav VU2YVK; Prakash VU2KPU; Madhukar VU2MUD; Sudhanva VU3VXJ

He thanked Shri. Shashidhar VU2TKO for coordinating to book and arrange the venue for the DJY celebrations as a member of Century Club. He thanked Shri. Madhukar VU2MUD for being the Contest Manager and efficiently managing the VHF and HF Contests

He thanked all the individual and corporate donors who donated generously to make the event happen successfully.

Ramesh Kumar VU2LU, Convener, DJY Celebrations, invited the entire organizing committee and the managing committee on the dias and thanked them for their contribution and hardwork which made the event successful.

VU2GDX, Amalanathan entertained the gathering with his harmonica playing nostalgic bollywood tunes. Quiz and Games were conducted by Smt. Chaya Girimaji and Smt. Sudha Kiran

The Diamond Jubilee Celebrations concluded with a grand buffet lunch at the venue.

THE DAYTON HAM MEET
The largest show in the world for amateur radio

Harsha VU2HPG

I had planned a vacation to USA in the last week of June 2018. Suddenly it struck me that a mega ham fest normally happens in Dayton Ohio every year in the month of May. Frankly I was not aware of the magnitude of the event & was not sure if it was worth the effort. I called up my good old friend VU2DEV & asked his inputs on attending this event. He had a very simple & interesting comparison for me. He said every Hindu will visit Tirupati at least once in his life time. Dayton ham fest is so if you are a ham. There was no second thought about his views. He has been one of the gurus in ham radio for many of us. I instantly changed my travel dates to suit the visit to Dayton.

As many of you are aware USA is a very big country to travel across. Luckily I was landing in Columbus, Ohio - which was just 65 miles away from Dayton. In one of my earlier trips to USA, I happened to meet Don (K9DA) and was in touch with him over e-mails. The moment I mentioned I am planning to attend Dayton, he was also keen to join me. He immediately purchased the entry tickets for both of us for all the 3 days. He even drove down 400 miles all the way to Columbus, picked me up & drove down to Dayton. I had reserved a hotel for both of us where we stayed together for the next 3 nights.

K9DA with VU2HPG

Dayton hamfest kicked off on a Friday morning (May 18th) and was on till Sunday (May 20th) afternoon. Tens of thousands of amateur radio enthusiasts from across the world converge on Xenia and the Greene County Fairgrounds. At 28,417 visitors from 65 countries, Hamvention recorded its third-largest attendance ever in its second year at its still-new location in Xenia, Ohio.

Dayton Hamvention theme for 2018 was "**Amateur Radio…Serving the Community**," and the event highlighted emergency communication forums — many put on by ARRL — plus a big display of emergency communication vehicles.

You drive down your car to a huge offsite parking. You are then commuted in a big bus nearby to the actual venue. You can then walk down or use a buggy. Multiple activities (technical sessions) are on from 9 am – 5 pm which keeps you completely busy on your toes on Friday & Saturday. On Sunday they wound up by 2 pm. There were a few hundreds of stalls selling A-Z of ham radio. Many of these are unfortunately not even available in India. Lot of stuff have discounts here. I happen to pick up quite a bit of stuff to my shack based on inputs from my local ham friends. There is even a big flea-market where you can find anything & everything which hams have stacked for many years. By Sunday 12 noon, lot of bargaining happens in the flea- market. Hams don't mind giving away stuff at very low prices, rather than carrying it back home at a cost. On Sunday afternoon they have a valedictory function & lucky draws. Lucky draws attract valuable ham radio stuff. The two-and-a-half days just fly & you still cannot completely cover the event. You feel probably you needed another two & a half day at least.

Popularity of this event is so high that attendees book their stay around this venue one year in advance. I had never been to an amateur radio event of this magnitude. I was extremely happy to attend this event & felt worth every $ spent towards this. My special thanks to Don (K9DA) who accompanied me to this event. I always look forward for my next chance to visit this event. I called up VU2DEV once I was back in India &

updated him. He was very happy to note and he told me my next 'yatra' must be to Friedrichshafen and the Tokyo ham-fest which are other big-time fests. I am now looking forward to attending these events.

Check out these videos - https://www.youtube.com/watch?v=qqIyNaisM14

https://www.youtube.com/watch?v=6-XN-9bMEMQ

https://www.youtube.com/watch?v=XRw6e4GGz0I

Jamboree-on-the-Air – JOTA - is held the third weekend in October every year. There are no official hours, so you have the whole weekend to make JOTA contacts. The event officially starts Friday evening and runs through Sunday evening.

Now that special permission is not needed to move your station to a school or scout-camp, I hope many members will take part in this year's JOTA and make it successful.

Don't forget to send me reports along with some photos for publication in the January issue!

Good luck to all the participants

VU2TS/Ed

Digital Communication

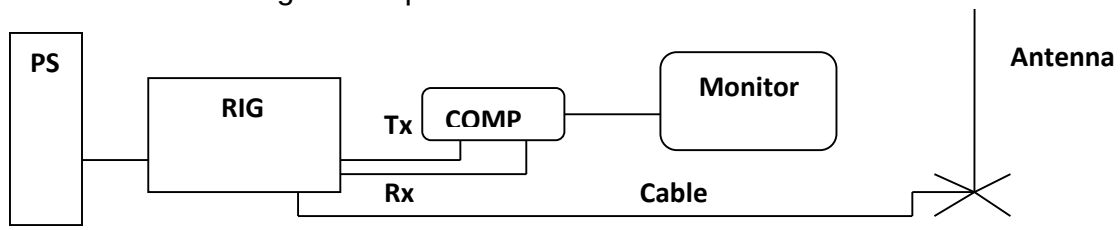
With propagation not favourable for DX contacts, it's time to take up Digital Communications.

Some advantages are:-

Digital signals can be heard over a longer distances as the bandwidth is smaller when compared with SSB transmissions. Some Digital modes in can be decoded by the computer even though they cannot be heard by the human ear. Signals as low as -24dB can be decoded by the computer even under noisy conditions, that's when the Signal to noise ratio is very low.

In RTTY mode, we can see multiple stations on the waterfall screen. It is possible to work a particular station on the waterfall by a simple mouse click for selection.

A schematic of a Digital setup si shown below:-



Basic Hardware needed in additional to regular Ham Radio equipment is a Computer. For a bare minimum setup only two cables required are the Audio receive and transmit cables. For better control of the RIG from the computer a CAT cable is preferred.

To summarise :-

1. Digital communication can be done over large distances.
2. Digital communication gives facilities like video transmissions SSTV
3. It can be tolerated the noise interference.
4. It can be detect and correct error easily.
5. Excellent processing techniques are available for digital signals.
6. No transmit / Receive noise in the Shack.
7. Cost of additional equipment is not high

Some of the popular modes in Digital communications are RTTY, and the 'weak signal' digital modes like PSK and FT8. Other modes like SSTC, Hell scriber , Olivia, Throb etc. are present but rarely seen on the band. So why wait, start communicating Digitally, enjoy the new modes…

de VU2IBI Prakash *'Kash'* Srinivasan

Notes on The *Es'hail 2 / QO-100* Satellite

The geostationary satellite Es'hail-2 carrying two amateur radio transponders launched from Kennedy Space Center at 20:46 GMT on Thursday, November 15, 2018 is now in a geostationary orbit at 25.9° east. These are the first amateur radio transponders to be put into geostationary orbit and they are linking radio amateurs from Brazil to Thailand. The AMSAT designation is AMSAT QO-100.

The satellite carries two "Phase 4" transponders operating in the 2400 MHz and 10450 MHz bands. A 250 kHz bandwidth linear transponder intended for conventional analogue operations and an 8 MHz bandwidth transponder for experimental digital modulation schemes and DVB amateur television.

Already, hundreds of amateurs worldwide are using the QO-100.

Sadly, some users seem to constantly ignore the rules set up by AMSAT-DL. After more than six months, the rules should be obvious to all users.

Working QO-100 is by no means easy and so there cannot be any 'accidental' transmissions. It has been observed of late, some users are ignoring the simple guidelines by transmitting outside its authorized frequency limits, exceeding the defined power levels limits and using excessive bandwidth and so on.

Such misuse *(or should I say 'abuse'?)* of the transponder seriously endangers the future of amateur radio satellites. The rules are in place for very good reasons. We need to treat this 'gift' with decency and care. Let's remember, it is not a service and we cannot use it as a 'right'.

Also, we need to remember that amateur radio via satellites has always been a low-power mode and there is absolutely no justification to use more power than required to communicate via the transponder.

Such abuse may will eventually lead to temporary or permanent stop of QO-100 operations and subsequently kill any future efforts to get similar payloads flying piggyback on future commercial satellites.

We need to respect all the volunteers of the Phase-4A project who have dedicated considerable time of their lives to make this happen – a dream-come-true for all of us.

AMSAT: *Of all leisure activities, only licensed radio amateurs have the valuable privilege of experimental use of frequencies. In addition to its rights to use frequency bands, the amateur radio service also has the privilege and obligation (for "self regulation") to independently design the intended use of the allocated areas with radio applications (operating modes and band plans). This also includes the coordination of radio operation facilities such as beacons, relays and satellites.*

AMSAT is indeed not in a position to play "Police", it can only give recommendations and advice. Although there is no formal bandplan, the following details are provided for initial guidance.

The narrowband transponder is intended for conventional analogue and narrowband digital signals.

No uplinks should result in downlink signals that are stronger than these beacons. In the event that such signals are detected, they will be marked by a "LEILA*" siren. When they have been marked by "LEILA", operators should immediately reduce their uplink effective radiated power.

Amateur Radio being a self-regulating radio service, we need to respect all the rules.

Not stronger than the Beacon, keep your signal below Beacon level.

No FM mode or any other modulation exceeding 2700 Hz bandwidth is allowed on the NB transponder.

No digital FM modes like C4FM, DSTAR and others, same rule as above!

No transmission below the lower CW beacon: the Amateur Satellites Service operate exclusively on a secondary basis in the band 2400-2450 MHz. You are responsibly for you own transmissions!

No transmission above the upper PSK beacon.

Please keep the "guardband" around the CW & PSK beacon free.of transmissions. If you transmit on 10489.795 MHz in USB, your spectrum will be up to .798 MHz and interfere with the PSK beacon.

Uplink polarization is RHCP (right-hand circular polarization).

Downlink polarization for the NB transponder is V (vertical linear polarization).

Excessive signals might trigger LEILA* warnings to remind you to reduce uplink power.

Full duplex operation is mandatory (you must be able to monitor your own downlink while transmitting!)

The Upper Beacon is modulated in 400 bit/s BPSK (similar to the P3-satellites).

The beacons are generated by the ground station and will carry additional operational or maintenance information.

Remote operation over Internet (Gateway traffic) is undesirable and only permitted during disaster communication.

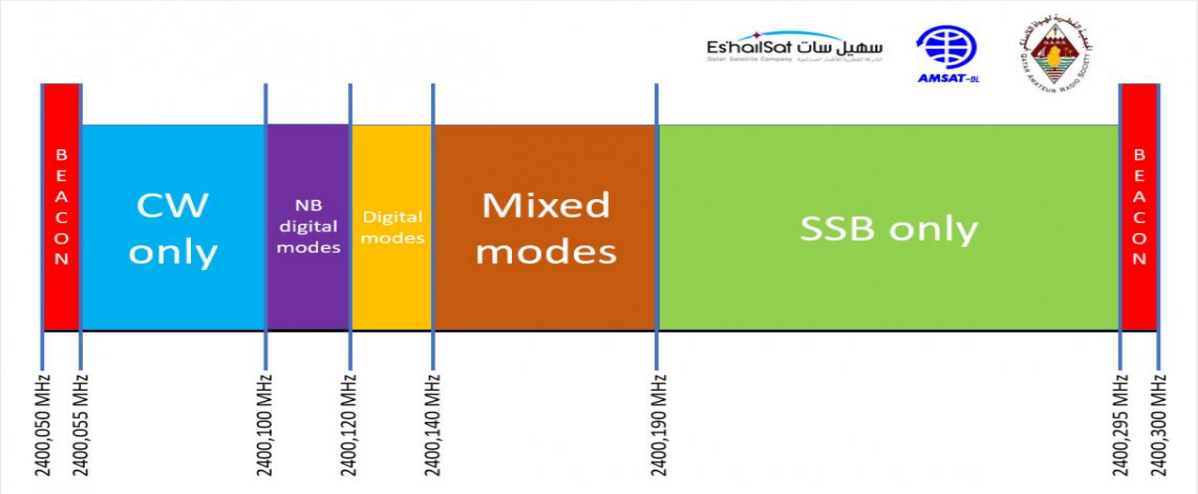
Listen to Es'hail-2 online with the AMSAT-UK / BATC WebSDR located at Goonhilly https://eshail.batc.org.uk/

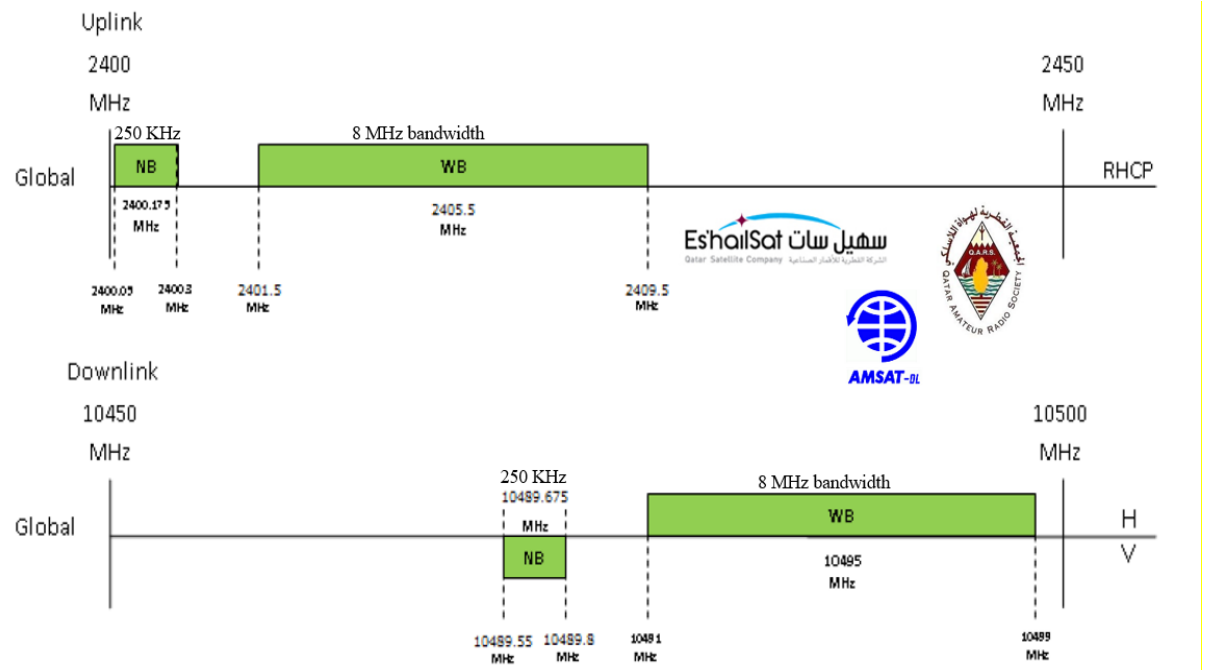
See the Satellite Forum for latest Es'hail-2 information https://forum.amsat-dl.org/

Es'hail-2 amateur radio information https://amsat-dl.org/en/eshail-2-amsat-phase-4-a

Es'hail-2 Narrowband amateur radio transponder operating guidelines https://amsat-dl.org/en/p4-a-nb-transponder-bandplan-and-operating-guidelines

Es'hail-2 Wideband amateur radio transponder operating guidelines https://amsat-dl.org/en/p4-a-wb-transponder-bandplan-and-operating-guidelines





Xpdr	U/L FREQUENCY (MHz)				D/L FREQUENCY (MHz)				LO	BW
No	Pol	Begin	Center	End	Pol	Begin	Center	End	(MHz)	(MHz)
NB	RHCP	2400.05	2400.175	2400.3	V	10489.55	10489.675	10489.8	8089.5	0.25
WB	RHCP	2401.5	2405.5	2409.5	H	10491	10495	10499	8089.5	8

**LEILA is a German acronym for "LEIstungs Limit Anzeige", which means: Power Limit Indicator*

The NB transponder is a bent-pipe, non-inverting, linear transponder with AGC.

A LEILA-2 system, similar to LEILA flown on AMSAT OSCAR-40 (P3-D) will be used for Traffic Control and Telemetry Beacons. The major difference is, that this is a ground-based system which will be installed at the Es'hailSat Satellite Control Center (SCC) in Qatar.

LEILA-2 will analyze the downlink power levels in the passband of the NB-transponder and automatically generate a Siren to remark users to decrease their uplink power.

LEILA-2 is a joint development of AMSAT-DL's Achim Vollhardt DH2VA and AMSAT-UK's Howard Long G6LVB.

Uplink [MHz]	Downlink [MHz]	available Bandwidth [kHz]	notes
	10489,550 – 10489,555	do not transmit	Lower beacon, 400 bit/s BPSK or CW
2400,055 – 2400,100	10489,555 – 10489,600	45	CW Only
2400,100 – 2400,120	10489,600 – 10489,620	20	Narrowband digimodes (500 Hz max. BW)
2400,120 – 2400,140	10489,620 – 10489,640	20	Digimodes (2700 Hz max. BW)
2400,140 – 2400,190	10489,640 – 10489,690	50	Mixed modes (2700 Hz max. BW)
2400,190 – 2400,295	10489,690 – 10489,795	105	SSB only
	10489,795 – 10489,800	do not transmit	Upper Beacon, 400 bit/s BPSK or CW

OFFICE BEARERS

PRESIDENT
Ramesh Kumar K G VU2LU
Care of Linux Learning Centre Pvt. Ltd.
635, 6th Main, Hanumanthanagar
Bengaluru KA 560019
e-mail: president@arsi.info

VICE PRESIDENT
Saravana G VU2ETS
364. 6th Cross / Kamakshi Hospital Road
Kuvempunagar, Mysuru KA 570009
e-mail : vicepresident@arsi.info

SECRETARY
Govind Girimaji VU2GGM
36, Sneha Colony
Chikkallasandra, Bengaluru KA 560061
e-mail: secretary@arsi.info

TREASURER
Krishna Kumar R VU3UNO
466, 19th Main / 36th Cross
4-T Block Jayanagar
Bengaluru KA 560041
e-mail: treasurer@arsi.info

EDITOR
Ganesh T S VU2TS
Watapi, B R Hills
Karnataka KA 561441
e-mail: editor@arsi.info

QSL MANAGER
Ramesh Kumar K G VU2LU
Care of Linux Learning Centre Pvt. Ltd.
635, 6th Main, Hanumanthanagar
Bengaluru KA 560019
e-mail: qslburo@arsi.info

Monitoring Systems Co-Ordinator
Sanil M.Deep VU2SIO
"Daylight" 23/1862, Kannanchery Road,
Kozhikode KE 673003

Contests and Awards Manager
Prakash (Kash) Srinivas VU2IBI
"Vauhini" 61, 11th Cross Indiranagar,
Bengaluru, KA 560038

The address of the Society to which all correspondence is to be mailed:
Ramesh Kumar K G VU2LU
Care of Linux Learning Centre Pvt. Ltd.
635, 6th Main, Hanumanthanagar
Bengaluru KA 560019