

# W6VIO Calling



Jet Propulsion Laboratory Amateur Radio Club  
PO Box 842, La Canada CA 91012-0842

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## Upcoming Events:

- **Emergency Communications Net:** Every Monday at Noon, on WR6JPL 224.08/(-)/156.7 & 445.20/(-)/103.5, or WR6AZN 223.96/(-)/156.7 on Table Mountain.
- **JPLARC Regular Membership meeting:** Second working Friday every month from Noon to 1pm in 180-703C. Call-in: 818-354-4044 ID-number: **997 183 539** (without the spaces). Slides (if any) broadcast via JPL WebEx (same ID-number). **Next was to be Aug 28<sup>th</sup>, but THIS MEETING IS CANCELED. Thus, no August regular meeting!**
- **JPLARC Board of Directors (BOD) meeting:** Normally, the first working Friday, every month, from Noon to 1pm in 180-703C. **Next is September 11<sup>th</sup>.** Call-in: 818-354-4044 ID-number: **997 183 539** (without the spaces).

## In this issue:

Topics in this issue:

- Regular meeting July 17<sup>th</sup>.
- BOD meeting: Aug 14<sup>th</sup>.
- EmComm
- ARRL Membership.
- Equipment for sale.
- Future membership meetings & speaker topics.
- Advertisements.

## Regular Meeting Jul 17<sup>th</sup>

By Rob Smith W6GRV & Jim Marr AA6QI

Present were: Matt Bennett<sup>†</sup> KF6RTB, Vaughn Cable<sup>†</sup> K6ZTA, Jonathan Cameron<sup>†</sup> KF6RTA, Bob Cesarone WA9JIB, Simon Flores<sup>†</sup> KK6URT, Chris Gaylord W6YTB, Mark Lysek<sup>†</sup> AG6TD, Ian Pinkham<sup>†</sup> KE6RFV, Michael Roche<sup>†</sup> N6XLK, Rob Smith<sup>†\*</sup> W6GRV, Jan Tarsala WB6VRN, Mike Tope<sup>†</sup> W4EF, Steve Townes<sup>†\*</sup> WB4ILW. On the Phone: Chris Carson<sup>†\*</sup> KE6ABQ, Merv MacMedan N6NO, Jim Marr<sup>†\*</sup> AA6QI, Michele Marr<sup>†</sup> KC6FSP, Walt Mushagian<sup>†</sup> K6DNS.

Note: † indicates a 2015 regular voting member (i.e., JPL/Caltech/Retiree & 2015 dues paid), and \* Indicates a BOD member. For a regular meeting quorum, the JPLARC Bylaws require a majority of the BOD (four or more) and at least five other regular members. We had four BOD members, nine other regular members and

five non-members (total of eighteen attendees), so we **did** have a quorum.

President Steve Townes opened the meeting with introductions.

Ian Pinkham KE6RFV: Our new shack is almost ready for equipment to be moved into it, although the coax work is still in process. There is an 18 wheel semi-truck trailer, wired for AC and lights, which will be parked near the shack for equipment storage or workspace. Will need to set it up so that keys can be issued. An emergency generator has also been moved next to the new shack. Ian would like to plan a field trip to see the new facility. Ian doesn't know when building 173 teardown will take place.

Ian also reported that he is still working the possibility for Cerro Negro - has a meeting with La Canada this afternoon - though the repeaters there may need to be designated as JEARS repeaters.

Ian asked whether anyone was still going to Sylvia's office (310-106) to do the weekly net that was answered in the affirmative, although the equipment may not have been re-setup following Field Day. Jim Marr pointed out that we still have excessive noise on 80m & 40m (S9+20dB) that needs to be worked. Jan Tarsala mentioned that he has received an email indicating that KSC is leading a look at new government frequencies for a NASA-wide ALE (HF automatic link establishment) network.

**Secretary report:** Welcome new 2015 members: Matt Bennett KF6RTB, Jonathan Cameron KF6RTA, Simon Flores KK6URT, Mike Tope W4EF, and Michael Roche N6XLK.

**Treasurer report** for June 2015:

Beginning Balance: \$4,784.19  
 Deposits: + \$85.00 – 2015 Membership Dues  
           + \$2.00 – ARRL Membership Commissions  
 Deposit Subtotal: \$87.00  
 Withdrawals: - None  
 Ending Balance: \$4,871.19

Jim, AA6QI, reported no funds have been spent this year against an approved 2015 budget of \$3,350.00.

Reminder: The club gets \$2 when you renew your ARRL membership through the club and \$15 for new memberships submitted through the club. See Steve Townes or Rob Smith for assistance with this.

**W6VIO Calling:** The July issue of the JPLARC monthly newsletter, W6VIO Calling, is out (available on the club website <http://jplarc.ampr.org>).

**Upcoming presentations:**

Sept. 25 Ian Pinkham will discuss the upcoming (October) Great Shakeout exercise.

Oct 23, TBD (results for great shakeout, but may be too soon afterwards).

Note: After the club meeting, some expressed interest in a presentation on new digital modes (such as JT65 and other digital modes), and topics on SDR and beacons.

**Upcoming meetings:** There was no JPL ARC board meeting on July 3rd, but there are two board meetings coming up on July 31st and August 14th. The next regular membership meeting will be on August 28<sup>th</sup> [ed: NOW CANCELED].

**Repeaters:** Jan Tarsala: This year, we have a number of summer students who are amateur radio operators and they are actually using the repeater equipment.

**Licensing & Upgrades:** For those looking to get licensed or to upgrade, there is a testing session at Huntington Hospital on August 8th.

**Presentation:**

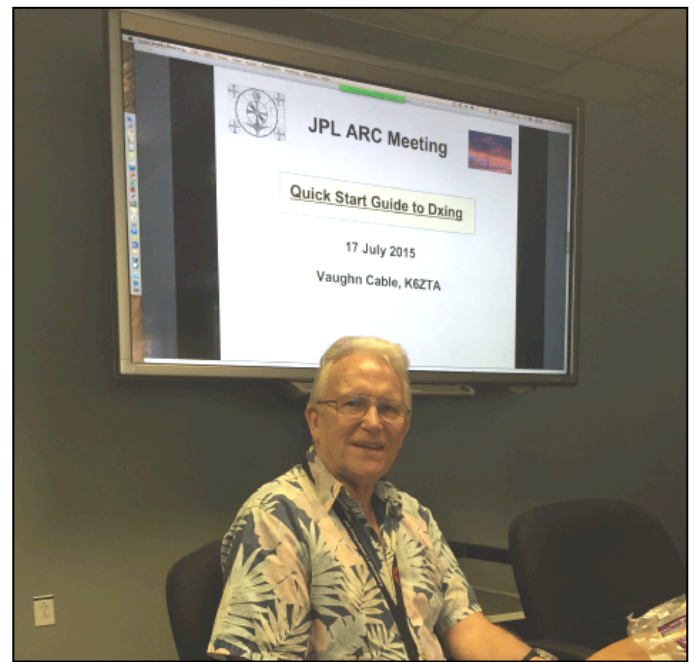
Vaughn Cable (Figure-1), K6ZTA (Section 337 antenna designer and lead telecom on 3 cubesat programs): "Quick Start Guide to DXing."

This talk is kind of the hitchhiker's guide to DX from Vaughn's point of view, i.e., what's important to him.

What is DX? It's another form of ham radio and also a form of stamp collecting in that we seek confirmation of a contact via QSL cards (that might also have great stamps for your actual stamp collection!). Getting that

QSL is right at the top of the list for DX'ers.

There are 338 [ed: 340 as of 8/23/15] DX entities. Vaughn doesn't call them countries because some are islands or reefs that aren't really countries. The exact number of these entities changes from time to time. The official list is maintained by the ARRL [ed: located at <http://www.arrl.org/country-lists-prefixes>]. Some are countries like Canada, Australia, Germany that everyone's aware of but they can also be pretty obscure like the Sovereign Military order of Malta, Equatorial Guinea, Nepal, etc. Once you work your first hundred, you can get hooked on this. Part of being hooked for Vaughn was short wave listening (SWL'ing) when he was young, especially weak signal work that has always been very interesting to him.



**Figure 1: Vaughn Cable K6ZTA, June Guest Speaker**

What about frequencies? DX can be had on any of the bands that we're authorized to use, even mountain-top to mountain-top at X-band, but that's not what we're talking about here. Not all entities can be heard on every band. We think of UHF DX as line of sight, tropo, meteor scattering, or ducting, all of which are common. At VHF, the same kinds of things, plus a little ionospheric. 6m, the bottom end of VHF, is heavily ionospheric. HF DX is mostly ionospheric, which is where skip really kicks into action. And then medium frequencies, below the AM broadcast band, with its own set of interesting propagation phenomenon.

What is this thing called skip? The bottom line is that sunspots rule, at least for frequencies 10 MHz and up, 40 meters and 80 meters somewhat, but it's really the upper frequencies that follow the sunspot cycle heavily. It's the maximum number of sunspots and their size that

matters. Sunspots work on an eleven-year cycle that repeats. Within this eleven-year cycle, skip changes day to day and from season to season. There's also a thing called the "grey line" which occurs right at sunrise and sunset at your location, so it's where the day-night transition occurs. For instance, the Indian Ocean falls along our local grey line.

What about modes? Phone, of course, is sideband (SSB) and CW can be fast, slow or whatever speed you can do, it doesn't matter. Slow CW is even better for weak signal work, like DX. There's the digital modes that Vaughn doesn't know a lot about but they do allow a lot of DX, certainly on RTTY, PSK (Vaughn once worked Pitcairn Island on PSK), and the JT modes. Then there's slow scan TV.

Vaughn's DX rules:

(1) Listen a lot and leave the CQ calling to the DX stations. Rare stations aren't going to come back to you if you're calling CQ DX because they're somewhere else and there's usually a pileup on them. So when you hear a pileup, you know there's a DX station in there somewhere and you've got to find him.

(2) Watch out for split operation. A lot of DX stations will say that they are listening up 10 kHz or 5 kHz or whatever. Sometimes they don't even identify that they're working split, so you have to figure that out yourself, even when there are a bunch of people calling on the DX station's frequency. By convention, the DX station's broadcast frequency is always below his listening frequency (where you hear the pileup). On SSB, it's usually 5 kHz or 10 kHz and on CW it's between 1 kHz and 5 kHz.

(3) Always look for the DX operator's pattern of operation. The DX operator will often work a station here and then work a station there, so you need to be able to listen to both sides of the conversation so you can discern that pattern.

(4) Don't call if they can't hear you.

(5) Do DX the hard way by not using spotting nets or the web or anything like that. Vaughn never has and never will. Steve Townes remarked that spotters can be useful for finding out whether the DX station is working split or not, saving you a lot of time trying to figure that out just from listening.

(6) The rule on CW: even if the DX station isn't working split, **never** call him on his transmitting frequency. If stations zero beat the DX station, then a station that the DX station is responding to won't be able to hear the DX station over others who are still calling the DX station. Vaughn always leaves a CW offset of about 150 Hz to make sure that he never comes back directly on the DX station's transmit frequency.

(7) Use QSK (full break in) if you can pull that off in your station, allowing you to hear between the dits & dahs while you are sending.

(8) Consider waiting until some of the pileup crowd stops calling before calling yourself, often allowing the DX station to hear you without your signal being drowned out by the pileup. But also listen to make sure that you're not calling when the DX station is already coming back to someone else, and here is where QSK is a real benefit.

Equipment: Anything that works in the desired mode. You don't need high power but it does help at times. You also don't need 'big bertha' antennas although they do help. You can work DX QRP (low power) even with the dipole in the attack sort of station. Sometimes DX stations will even preferentially pick up QRP stations.

There are 'good' DX operators and 'bad' DX operators. One of the worst are the French, in that they rarely sign their call sign, so you might have to wait 30 minutes to find out who everyone is working. There isn't much you can do about the DX operator's skill level.

Vaughn's gear consists of an ICOM 756 Pro III, with a spectrum display that Vaughn has learned to love since he can see both sides of a split QSO. He has an old Heathkit kilowatt amplifier (SB-220) that he bought used years ago and it's still working pretty well. His antenna is a Force 12 (the manufacturer) model CS triband Yagi (two elements on each of 20m/15m/10m), a 40-meter Yagi, a 30 meter inverted V and an 80-meter inverted V.

Often if you Google the call of a DXpedition that you're interested in, you can find out a lot about when the station will be on the air and what frequencies they'll be hanging out around.

Thanks to Vaughn for an interesting and useful talk!

## BOD Meeting Aug 14<sup>th</sup>

By Rob Smith W6GRV

Present were: Bob Dengler<sup>†</sup> NO6B, Chris Gaylord<sup>†</sup> W6YTB, Rob Smith<sup>†\*</sup> W6GRV, Jan Tarsala WB6VRN, Steve Townes<sup>†\*</sup> WB4ILW. On the Phone: Chris Carson<sup>†\*</sup> KE6ABQ, Jim Marr<sup>†\*</sup> AA6QI, Walt Mushagian<sup>†</sup> K6DNS. Interns in the room: Josh Miller KB3UUS and Alex Yuan KD2HJV.

Note: <sup>†</sup> indicates a 2015 regular voting member (i.e., JPL/Caltech/Retiree & 2015 dues paid), and <sup>\*</sup> Indicates a BOD member. For a BOD meeting quorum, the JPLARC Bylaws require a majority of the BOD (four or more) to be present. We had four BOD members, three other regular members and three non-members (total of ten attendees), so we **did** have a quorum.

**Secretary Report:**

48 current members (43 current voting members) – same as July. Added one new member at the meeting today (Chris Gaylord W6YTB)

**Treasurer Report:**

Balance remains unchanged from last month at \$4871.19. Field day expense (of \$17.50) is to be submitted (pending expense).

**Topics:**

1. August 28th General club meeting – Many members of the board are unavailable

Aug. 28th, Steve will not be able to attend; Rob is 50/50 for being able to attend due to a pending work commitment; Not sure about VP or Treasurer being able to attend. Chris Carson will not be able to attend. Additionally, there are some end of year picnics and other conflicting events.

- Decided to defer the talk; will cancel the general meeting for August 2015.
- Sept 25th is Ian Pinkham, KE6RFV, "JEARS Progress Update" in prep for the great shake out. That will not move.
- Slip Mike Roche's talk on "digital mode DXing for beginners" to Oct. 23rd (was Aug. 28th); slip Matt Bennett's talk on Amateur radio on the international space station to Nov. 20th. Eric (HRO) slips into the new-year. (Eric/HRO had not been confirmed yet; this was a potential talk; do not need to contact them regarding the slip).
- Steve to send Rob the contact information for Mike and Matt to follow up. Once the change has been coordinated with them, then Rob will send announcement to reflector.

**2. New Shack**

Chris Gaylord W6YTB: Re-keying is almost complete.

Working on getting an update for where we are on pulling the new cable.

New building number is 329 "Radio Communications Building."

Steve Townes asked Chris G. to look into what the timeline is for demolishing the B.173 shack so we can get started planning how we're going to do the move.

Chris Carson: Cables are on the mesa; August 17th, they are supposed to start stake installation and confirm the route for running the coax; Aug 20-21 is the cable installation. After the 21st, we should be able to start making the connections to the coax. The Generator transfer cable is made.

Jim – We need to think through how we are going to actually hook cables to antennas. We have Ameritron

RCS-4 remote antenna switches up on the hill; need to decide if we plan to use the switches or if we use a coax for each antenna. The existing 7/8 inch hardlines from remote coax switch to TH-7DX tri-band and XM-240 40m beams are fairly long; need to analyze the lines and antennas. Chris C. suggested that we will have to relocate the switch to the base of the Rohn-45 tower.

Stan Sanders and Mike Tope were heavily involved in configuring the original coax lines.

Jim M. - We should look at whether we need any shelves in the new trailer; if we want shelves, it would be good to put those in before we pile equipment into it.

Steve: Where is the trailer? Chris G. - It is next to the shack, and he is looking into its power connections.

Chris G. - Once the key issue is solved, we can start moving items into the new trailer. Chris G. & Chris C. to sort out the details regarding power to the trailer (connections & generator).

There is a 4 element 2m beam on the rail on a pole at the top of the concrete steps to the west of Building 173 (the stairs to nowhere). It is exactly like the one on the mesa.

There is an R7 vertical at B.173 that we will need to take down. Chuck Sarture helped in the installation of this antenna and can lead the takedown.

Chris C. - We are not sure about where to put the tower that was planned for being next to the new shack; the footprint of the shack and the trailer covers some of the area planned for the tower. (Chris C. is looking into this).

There is a 4 element stacked dipole antenna on the pump house to the south west of 173 that is being used by tri-band VHF/UHF transceiver in building 173; need to take that down too.

**3. The Great Shakeout & Equipment in building 310**

After FD, not sure that all the equipment has been returned & connected. (such as the 4 headphone amp). Need to setup and test this equipment.

We should talk to Will Michael about spreading out the station in 310-106 so that you can be on VHF and HF at the same time (Sylvia's office). Need to think about this and how we staff those positions for the great shakeout.

Need to do more planning before the great shakeout this year. We need to look at the lessons learned from last year. There are procedures and processes that need to be thought out. Need to designate someone to be the JPL ARC chair (club side) to work with Will Michael, Ian Pinkham and Chris Gaylord (JPL work side).

Jim Marr has lessons learned and will send to Chris G.

Last year, we were unable to get the FT-897 in Comm Van running on HF. Antenna on top (ATAS-120) is

damaged. Need to test rig & repair/replace antenna. Steve: Priority wise, need the equipment in building working properly and we need the exercise procedures in place.

Steve will be away from the Lab for 3 weeks. Steve will meet with Chris G. when he gets back regarding the great shakeout, the building 310-106 equipment status, and the related processes/procedures.

Chris G. - At the last meeting, it was asked, "Is anyone actually using the radio in Sylvia's office?" - Chris G stated that in his discussions with Will M, Will M. suggested that Chris G. use it for the Monday noon net.

NASA Emergency net - Will M. asked about that as well. Jan T. is actively involved with that net.

#### 4. Officer Nominating Committee for 2016:

In Sept. we need to have the nominating committee in place. Need someone to run the committee. This is the one committee that Steve Townes (the club president) cannot be a member of.

Need to rotate other club members into the officer positions. Everyone should start thinking about it.

#### 5. Cerro Negro repeater site:

There was some consideration of moving JPL assets back to Cerro Negro, including the JPL ARC repeater. Ian P. had a meeting with La Canada Flintridge city government officials (around the time of the last club meeting); Chris G. will check the status/outcome of that meeting.

#### 6. Building 310 HF Noise issue:

Chris G asked about the HF Noise issue.

Jim M.: Steve T., Jan T. and Jim Marr spent time trouble shooting the noise; the problem is on 80m/40m there is 20dB over S9 noise level; have been unsuccessful so far in tracking down the source. These are two bands that are likely to be used for emergency Comm. and the noise level makes them essentially unusable.

Possible causes are the air conditioning units. Jan T.: The noise coming down the outside of shield of coax from HF antenna on the roof. Jan T. has RF chokes to put on coax to see if this helps. Have not checked to see if it is associated with a single power load (by systematically turning off loads in B.310).

#### 7. Table Mountain repeater equipment

Ian P. was at Table Mountain recently; looked at repeaters and was not sure if all 3 repeaters were still functional? Bob D. & Jan T. - yes, they are functional. Jim M. has slides talking about the configuration; Jim will send them to Chris G.

Chris G.: At table mountain, no one located up there is

currently a licensed amateur radio operator. They may look at having others get licenses up there.

Meeting adjourned at 1:00 pm.

## EmComm

By Jim Marr AA6QI

The annual Great ShakeOut exercise is coming up again in October and is an opportunity for the club to practice our EmComm skills. Since all on-lab JPLARC members are implicit members of the JPL Emergency Amateur Radio Service (JEARS), we hope that those of you who are on lab will consider taking part in this year's exercise. To help us prepare for this year's exercise, it's worth thinking back to last year's exercise and what we learned from that.

Recall that last year a significant number of us had difficulty remembering how to operate our radios. Specifically, many forgot things like how to switch to another repeater or how to switch to a specific simplex frequency. So, it's worth the time to get out the manual for your radio and practice doing these kinds of things since we tend to forget the things that we don't use frequently.

You might also consider putting together a 'go kit' that contains things like spare batteries, an AA-cell battery pack and a package of AA batteries, a hat, a hand mike if you use one for events like this, pen and paper for taking notes, water and snacks, and anything else that you're likely to need while participating in an EmComm event.

We expect that specific JEARS instructions will be passed out this year prior to the exercise that will spell out the positions that we need to staff and where we should assemble. Remember, though, that aspects of the exercise will be unknown prior to their occurrence and we need to be prepared to deal with those unknowns as they occur, that being part of what makes the exercise so much fun.

For example, last year, we ended up having difficulty communicating with our JEARS member in the Emergency Operation Center (EOC) and resorted to runners but the runners couldn't enter through the main EOC door in the building 310 hallway. After the exercise, it was recommended that runners go through the back door into the EOC, accessed through 310-106. While this is what was decided last year, we should be attentive to whatever direction we get from our JEARS leadership in Protective Services.

## ARRL Membership:

By Jim Marr AA6QI

As an ARRL affiliated club, we need to maintain at least 51% ARRL membership among our voting members.

As of July 17, 2015, of our 48 CY2015 members, 34 (71%) are either Life (7) or Regular (26) ARRL members. Note that 72% of our 43 voting-eligible members (i.e., JPLARC Regular members) are also ARRL members.

While there are no requirements to maintain ARRL membership, there are some clear advantages to having ARRL membership. Some of these are:

- Receiving the monthly QST magazine and having access to all back issues electronically.
- Being able to subscribe to weekly ARRL news, propagation forecasts, and satellite ephemeris notifications.
- Being able to subscribe to the electronic monthly Amateur Radio Emergency Service (ARES) newsletter that may be of interest to members who wish to stay current on emergency communications.
- Member discounts on materials and training. For example, the ARRL Introduction to Emergency Communication Course is \$85 for non-members but only \$50 for members.
- You support ARRL, the only significant amateur radio advocacy organization in the U.S. that is fighting to protect our access to the airwaves.

Should those of you who are not already members and may wish to join, please do so through the Club rather than joining directly through ARRL. Why? If you join through the Club (new members), the Club retains \$15 of your membership fee to support Club activities. From your point of view, the amount you pay is the same either way. Even if you are a member who is just renewing, doing so through the Club nets the Club \$2, again without changing your costs at all.

To renew through the Club, see Secretary Rob Smith who will help you with the paperwork (don't worry, it's really simple!).

Thanks in advance for considering joining ARRL or for maintaining your membership.

## Equipment For Sale

By Jim Marr AA6QI

The sale of the following items of surplus JPLARC equipment was approved by the quorum present at the October 24, 2014 regular membership meeting. Please make your best offer to Club Treasurer Chuck Sarture at JPL. All equipment is sold as-is with a receipt from the JPLARC.

- ICOM IC-27H 25W 2m FM transceiver, asking \$40.

- Kenwood TR-9130 all-mode 25W 2m transceiver, asking \$60.

- ICOM IC-471A all-mode 70cm 25W transceiver with external PS-30 power supply, asking \$100.

- ICOM IC-471H all-mode 70cm 75W transceiver with internal power supply, asking \$150.

- ICOM AG-35 70cm mast mounted preamp, asking \$10.

- Packet Station consisting of an MFJ-8621A 2m Data Radio with crystals for 145.01 MHz & 145.09 MHz, and an AEA PK-232 MBX TNC, asking \$15 for the pair.

## Future Meetings

By Jim Marr AA6QI

All JPLARC meetings are being held on non-RDO Friday's from Noon to 1 PM in 180-703C. Upcoming talks (subject to change, as always):

Potential topics for the rest of the year include (although not all speakers are confirmed yet and always subject to change):

**September 25<sup>th</sup>:** "JEARS and Great ShakeOut", Ian Pinkham KE6RTA.

**October 23<sup>rd</sup>:** Guest speaker: Mike Roche N6XLK, "Digital mode DXing for the Beginner using PSK31 and JT65 HF modes", discussing his experience with setting up and operating PSK31 and JT65 modes. Also: President Steve Townes to announce the 2016 club officer nominating committee.

**November 20<sup>th</sup>:** Guest Speaker: Matt Bennett KF6RTB "Amateur radio on the International Space Station." Also: nominating committee to present the slate of candidates for 2016 offices and take additional candidates from the floor. If only one candidate for any office(s), voice voting will take place at this meeting. If more than one candidate for any office(s), follow balloting process described in club Bylaws (<http://jplarc.ampr.org/Bylaws-2014.pdf>) article VII Section 3.

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