



# WASHRAG<sup>TM</sup>

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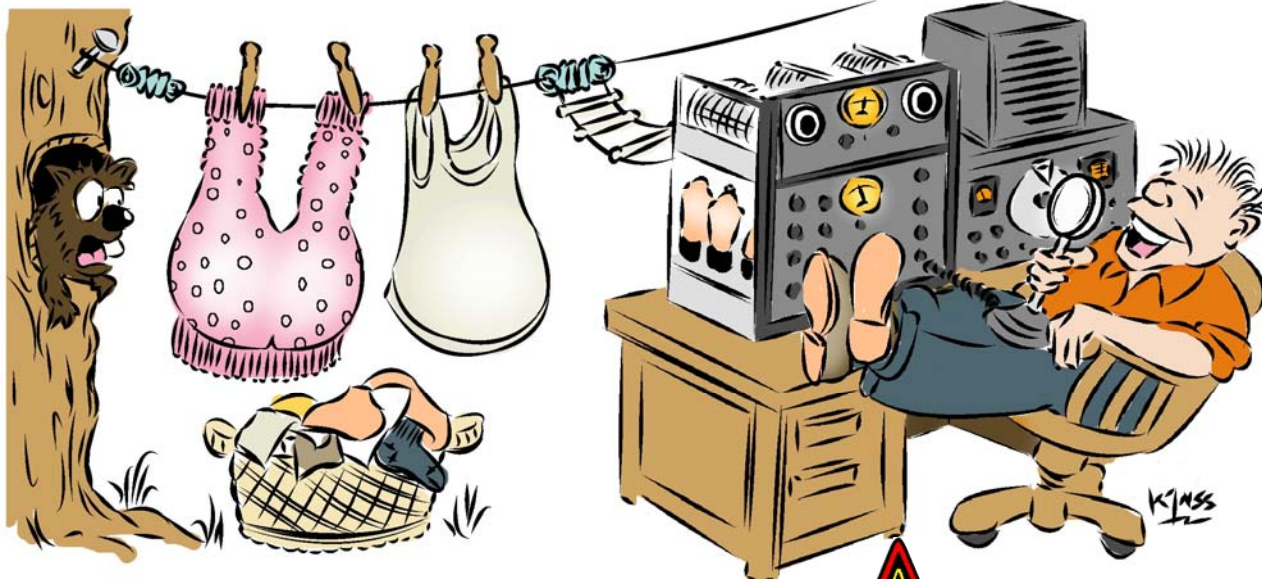
VOLUME 18 ISSUE 03  
MARCH 2016

Wireless Association of South Hills



N3SH WA3SH NP2SH/B

[www.n3sh.org](http://www.n3sh.org) [www.washarc.org](http://www.washarc.org)



## WASHRAG™



VOLUME 18 ISSUE 03

MARCH 2016

### Next Monthly Meeting: Thursday, March 3<sup>rd</sup>, 2016

The next meeting of the **WIRELESS ASSOCIATION OF SOUTH HILLS, INC.** will be on **Thursday, March 3<sup>rd</sup> 2016**, in the Conference Room at the **St. Clair Hospital Outpatient Center, 2000 Oxford Drive, Bethel Park, by South Hills Village & Village Square** (map on the back page). The room is available at 6:30 PM. The meeting will be starting at 7:00 PM.

It's our annual post-hamfest Pizza Night! Meeting topics will include the wrap-up discussions about **WASHFest 2016**, Field Day, Dayton Hamfention, other club plans for 2016, and more. See you there!

Cover Photo: Jim Forkin WA3TFS talking about his work on home-brewed SDR projects, including his article in the January 2016 issue of QST, at the February **WASH** Meeting. Photo courtesy of & © Copyright 2016 Ron Notarius W3WN

## WASH 2016 OFFICERS

### EXECUTIVE COMMITTEE:

President	Carol Danko KB3GMN
VP / Secretary	Ben Williams KB3ERQ
VP / Treasurer	Mark Stabryla N3RDV

### AND WE COULDN'T DO IT WITHOUT:

N3SH Trustee	Larry Comden K3VX
WA3SH Trustee	Rich Danko N3SBF
NP2SH Trustee	Paul Jordan NP2JF
N3SH WA3SH NP2SH/B QSL Manager	Ron Notarius W3WN
NP2SH 2009 QSL Manager	Carl Schroeder K9CS
VE Team Liaison	Ron Notarius W3WN
Webmaster	Sean Sleeman N3NWR
Asst. Webmaster	Ben Williams KB3ERQ
Quartermaster	Harold Rosenberger K3HCR
WASH FM Net Manager	Glen Roberts KE7FD
WASHFest 2016 Committee	Carol Danko KB3GMN, Chairman
	Bill Hill W3WH, Co-Chair
Activities & Operating Events	Rick Bell KB3IAC
Ways & Means	Carol Danko KB3GMN
WASH 2M Contest Chair	Jim Sanford WB4GCS
Field Day 2016 Coordinators	Rick Bell KB3IAC

### CLUB-AFFILIATED REPEATERS, BEACONS, & DIGIPEATERS:

Mt. Lebanon	N3SH / R	146.955 MHz (-)	PL 131.8
North Side	N3SH / R	442.550 MHz (+)	PL 131.8
Canonsburg	N3FB / R	443.650 MHz (+)	PL 131.8
St. Johns, VI	NP2SH / B	28.276 MHz	Propagation Beacon
Canonsburg	N3SH	144.390 MHz	APRS Digipeater

**N3SH / WA3SH WASHNet**, the weekly on-air net of WASH, meets every **Monday** Night, 8:00 PM ET, on the 146.955 & 443.650 repeaters. All radio amateurs, WASH members or not, are welcome to join in!

## THE LEGAL STUFF

**"The WASHRag™"** (formerly **"The Mariner™"**) is the Official Newsletter of the **WIRELESS ASSOCIATION OF SOUTH HILLS, INC. (WASH)**

Published Monthly with occasional Special Editions as warranted.

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Editor & Publisher: Ron Notarius W3WN

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The **WIRELESS ASSOCIATION OF SOUTH HILLS, INC.** was founded on August 23<sup>rd</sup>, 1993, as the original **SOUTH HILLS AMATEUR RADIO CLUB**, and operated under that name through 1998. WASH was also known briefly in late 1998 as the **N3SH AMATEUR RADIO CLUB**. It is not in any way affiliated with the "South Hills Amateur Radio Club, Inc." and is not responsible for that group, its members, or its actions in any way, shape, or form.

As always, special thanks to the owners & operators of both the N3SH/R Repeaters and the N3FB/R Repeater System for permitting the **WIRELESS ASSOCIATION OF SOUTH HILLS, INC.** and its members to use their repeaters for club purposes.



## WASH Amateur Radio Club News Briefs

### Next WASH VE Test February 28<sup>th</sup>

The Next WASH VE exam sessions will be **Sunday, February 28<sup>th</sup>, 2016, 10:00 AM**, at **WASHFest 2016**, 3600 Library Road, Castle Shannon, PA. Talk-in on the 146.955 MHz and 443.650 MHz repeaters. All examiners are ARRL VEC affiliated.

**Pre-registration is required. Walk-ins will NOT be accepted** due to limited available space. If you plan on attending the test session, please contact VE Team Liason Ron Notarius W3WN:

Telephone (412) 572-6723 or E-Mail: [w3wn@n3sh.org](mailto:w3wn@n3sh.org)

Please bring the following to your test session:

Picture ID or other suitable identification (2 forms of ID required)

Pen / Pencil / Calculator

Original FCC license plus a copy of license (if upgrading)

Original CSCE plus a copy of CSCE (if upgrading)

Check or Cash in the amount of **\$15.00** (payable to: ARRL VEC)

April 14<sup>th</sup>, 2016

Future test dates (tentative): July 21<sup>st</sup>, 2016

October 20<sup>th</sup>, 2016

### Carol's Comments

**WASHFest 2016:** This year marks our 21<sup>st</sup> Hamfest. Our goal is to provide a good time for all those who attend, members as well as guest's!



I look forward to seeing you all there. Remember this is our only fundraiser which makes it possible for other programs and events in the coming year, such as Field Day, Picnic's and of course Pizza night which by the way is at Thursday's meeting, 3/3/16 at 7 PM.

As they say all we have to do is cross the T's & dot the I's, and hopefully everything will fall in to place.

Richie and I will be there around 4:30am for set up for those of you who volunteered to help.

See you on Sunday.

— 73, Carol Danko KB3GMN

President, Wireless Association of South Hills, Inc.

N3SH / WA3SH / NP2SH/b

Ontario  
Amateurs  
indicate that  
the time-  
limited  
exemption for  
Amateur Radio  
under the  
province's  
"Highway  
Traffic Act"  
ban on mobile  
2-way  
communica-  
tions is set to  
expire in less  
than 2 years,  
on 1 January  
2018.

Phil McBride  
VA3QR is  
spearheading  
efforts to have  
the extension  
made  
permanent.  
Contact him at  
[va3qr@rac.ca](mailto:va3qr@rac.ca)  
for more  
information

Well, normally we start off this part of the newsletter with a recap of the last-Saturday-of-the-month gathering of **the WASH Breakfast Gang** at **Suzie B's**, Route 910 at the intersection of Route 519 at US 19 in Canonsburg. That's going to be a little tough to do this month, since this "early edition" is coming out before the get-together! So consider this a reminder to all that our next gathering for 2016 will be on Saturday, February 27<sup>th</sup>, as usual at **Suzie B's**, Route 910 at the intersection of Route 519 at 19, Canonsburg. Our "usual" tables will be reserved, but **please** let Jim WB4GCS know ahead of time, so that Suzie & her crew will have enough space available for us. (We really don't want to fight the State Police for seats... we'd lose!) See you there?

Obviously, last minute preparation for **WASHFest** will be a big topic on Saturday!

We're pushing out this "early edition" before **WASHFest 2016**, in part so that we'll have copies available at the club table. Needless to say, if you haven't already spoken with Carol KB3GMN and let her know when you can arrive to help out, NOW is the time to do it.

We will **NOT** have access to Memorial Hall on Saturday, due to another event. So we need a few folks on hand circa 4:30 to 5 AM on Sunday to help set the tables up. (Actually, put away the tables we won't need and get the rest arranged). The Talk-In Station should be QRV by 6 AM, although HT's will be monitoring 955 beforehand.

The **VE Session** will begin at 10 AM... actually, we'll start gathering the candidates (we've already got a half dozen) about 9:30 to get any paperwork started. Space is VERY tight, as we saw last year, so we positively will NOT do walk-ins. We simply can't. All club VE's who will be present on Sunday are asked to bring their credentials, just in case we need an extra hand... well, except for one. One of our candidates is Chris Sanford KD4VSL... so Jim WB4GCS can't be involved this year, to avoid any conflicts of interest.

Rick KB3IAC is going to need **a hand in the kitchen** again this year. If you didn't see his email, breakfast will include choices of Sausage Egg & Cheese Croissants and Biscuits, Canadian Bacon Egg & Cheese Honey Wheat English Muffins, and possibly an assortment of other breakfast muffins.. The lunch menu includes a hot sausage sandwich, seasoned roast beef sandwich, meatballs, vegetable soup, and homemade pepperoni & cheese rolls (like the ones sampled at the last meeting. Plus coffee and other beverages, of course. Makes one hungry just thinking about it...

Ron W3WN wants to remind club members who will be helping out at Talk-In, the VE Session, or almost anything else... he will have his usual two tables, and if you only have 1 or 2 things to sell, we can make some space. But try and contact him first, so we don't get overwhelmed!

Moving away from **WASHFest** ...

The SSB weekend of the **ARRL DX Contest** is coming up on March 5<sup>th</sup> & 6<sup>th</sup>. Once again, Ron W3WN is going to host a "just for fun" Low Power Multi-Op Single Transmitter team from his QTH. All **WASH** members are invited to come over during the contest period and lend a hand... no experience necessary. It's a lot of fun! Just be forewarned that LucyFurr will want to make friends with you...

Our **VE Sessions for the rest of 2016** have been scheduled. Note that the April session is taking place on the second Thursday, as WPXI is not available to us the "usual" week. Thanks again to Frank N3FB for taking the time and trouble to make the arrangements with the station for us.

Larry K3VX has made **a small stock of resistors available** to **WASH** club members, no charge, first come first served, and when they're gone, they're gone. As Larry has limited space at his QTH at present, Ron W3WN is storing them for distribution. So, if you need a few for a project, just send a short e-mail W3WN

### WASHNet NCS Schedule

03/07/2016	Bill W3WH	05/02/2016	Glen KE7FD
03/14/2016	Bob AB3ED	05/09/2016	Harold K3HCR
03/21/2016	Digital Net	05/16/2016	Digital Net
03/28/2016	Carol KB3GMN	05/23/2016	Larry K3VX
04/04/2016	Chuck KC3ELA	05/30/2016	Mike WA3PYU
04/11/2016	Dave N3DFK	06/06/2016	Rick KB3IAC
04/18/2016	Digital Net	06/13/2016	Bill W3WH
04/25/2016	Fred KB3DCO	06/20/2016	Digital Net

Join WASH or Renew your Membership Today! Membership Application on Page 15

## Minutes, February 4<sup>th</sup> Meeting

Ben Williams KB3ERQ, Vice President / Secretary, **WASH**

Carol KB3GMN called the meeting to order at 19:03 hours. 23 members and 1 guest were in attendance.

A moment of silence was observed for recent silent keys & others deserving.

Motion to waive reading of the minutes based on the minutes printed in the newsletter by Bill W3WH, second by Larry K3VX, passed unanimously.

### Committee reports:

Treasurer (N3RDV): A balance on the bank account was read & accepted.

Secretary (KB3ERQ): No Report

VE (W3WN): Next VE Session at **WASHFest** on February 28<sup>th</sup>; due to space limitations, there will be NO walk-ins this year. The rest of 2016 to be scheduled. Thanks to N3FB for making the arrangements.

Repeaters (N3FB): Still repeating, the machines still need a little TLC. Congratulations from Carol on behalf of the club to Frank, Rick, Jim, and everyone else involved for all their hard work (applause).

**WASHNet** (KE7FD): Glen: is thinking about having a swap net \_after\_ the regularly scheduled weekly net. We could start this in March. Discussion was had about the other clubs that had done this, and it was perceived that it brought in additional traffic and participation.

N3SH.ORG (N3NWR): Website is doing very well.

Contests (K3VX): As usual, there is a very nice list of contests in the newsletter. Reminder that Field Day 2016 will be held at Babcock Shelter, South Park.

### **WASHFest 2016** (KB3GMN):

- As of the meeting night, now we have 38 tables spoken for.
- All the prizes have been purchased.
- We can't get into the hall until 4:30 AM the morning of the event this year, because there is an event the night before.
- Eagle One canceled their table reservations because they need access to the hall the night before to unload all the product.
- Kathy Sauder is still coming.
- We need help in the kitchen. We need at least 2 more volunteers to work the kitchen. Talk to Rick or Carol to volunteer.

### Public Service (N3RDV):

- Mike WA3PYU is still looking for volunteers for the St. Patrick's Day Parade on March 12<sup>th</sup>. He needs at least 5—6 more ops.
- Bob AB3ED talked about the ARES/RACES Net for Allegheny County and about the RACES meetings. Harry W3YJ is encouraging people to participate; FEMA training classes are now required, but are available online for free.

Ways & Means (KB3GMN): 50/50 tonight. "Show me the money!"

Newsletter (W3WN): Out. Consensus to email request was to try and get the March issue out early so that it could be available at **WASHFest**; a 'special' issue with hamfest pictures will come out later in the month.

### President (KB3GMN):

- Presented the Kilowatt Award for 2015 to Jim Sanford WB4GCS, in recognition of all his hard work on the repeaters and behind the scenes. (Applause).
- Our guest speaker tonight is James Forkin WA3TFS, who will talk about his SDR rigs and related work.

Old Business: None

New Business:

Frank N3FB brought the paperwork for WPRC membership for 2016. Motion by Jim WB4GCS, second by Ron W3WN, to spend \$30 for annual WPRC dues. Approved unanimously.

Jim WB4GCS talked about satellite station for Field Day and whether or not it was worth setting up this year. Discussion.

Good of the Order: Bill W3WH discussed whether we should continue the 2M contest. There was not a lot of participation this year. Others noted however, that there was a lot of participation in other recent years. It was also recommended that we would revisit this after next years 2M contest. Perhaps this years lower rate of participation was an anomaly.

Motion to Adjourn by Rick KB3IAC, second by Eric K3SGT and carried.

Meeting adjourned at 19:33

Rick KB3IAC brought pepperoni rolls to sample, they may be on the menu at **WASHFest**.

Talk by Jim WA3TFS followed.

## WASH Spotlight: KW Award

Photo courtesy of and © Copyright 2016  
Ron Notarius W3WN



Congratulations to Jim Sanford WB4GCS, who was recognized with the 2015 WASH

Kilowatt Award for

outstanding service to the club and in recognition of all of his time, effort, and hard work on keep the club repeaters operating!

Every month we're going to feature a **WASH** club member, something about them, something they're involved in or a club-related activity that we're involved in, in the **WASH Spotlight**. Submissions for the Spotlight should be sent to Ron W3WN at [newsletter at n3sh dot org](mailto:newsletter@n3sh.org)

## Monthly WASH Breakfast

Please join us for the next **WASH** Breakfast! We usually get together on the LAST Saturday of every month for a chance to informally sit down, shoot the breeze, compare notes, drink lots of coffee, and just have a good time!



Join us this month at **Suzy B's**, Route 910 at the intersection of Route 519 at US 19, 1 mile North of Downtown Canonsburg. .Start time is about 8 AM until ????. Monitor 146.955 & 443.650 for talk-in or any last minute changes. All are welcome, **WASH** members or not, amateurs or not!

## Wireless Association of South Hills Membership

<b>2016</b>					
AB3ED	W3WH	KC3DOF	WASH FL	WASH SC	<b>Silent</b>
AB3NM	W4CKR	KC3ELA	KA3UPY/M	N3RNK	<b>Keys</b>
K3HCR	WA3PYU	KC4WTT	W4ZE		
K3SGT	WA3VSS	KE7FD	WASH NE	WASH TN	AB3KA
K3VX		N2QIV	N0PEU	K3OL	K3EED
KA3VXM	<b>2015</b>	N3DFK	WASH OR	KE3XB	K3LIE
KB3GMN	AA3GM	N3IDH	N0VLR	N3YPB	
KB3GMU	AE3DL	N3KFD	WASH TX	WASH TX	KA3NMG
KB3IAC	K3LGM	N3RDV	N0WVP	NB3C	KB3ENX
KB3IVX	KB3DCO	N3RHT	KB3NVL	K3LGM	KB3FNM
KB3JHR	KB3ERQ	W3LE	KB3NVM	KB3IJX	KB3FQT
KB3ORO	KB3GMP	W3RWS	WASH OH	Jane Wagner	KB3JHQ
K15ZT	KB3GUZ	W3WN	N8DPW	WASH VI	N3CZZ
N1NCZ	KB3PSB	WB4GCS		NP2JF	N3FZ
N3FB	KB3YCX				N3HKQ
N3SBF					N3KEH
NU3Q					N3OBD
W3VFA					N3SKR

*If your call should be listed here & isn't, please contact Mark N3RDV*

Through February 22<sup>nd</sup>, 2016  
List compiled by  
Mark Stabryla N3RDV, Vice President/Treasurer

W3ZLK  
WA3JPP

# 2016 WASH Upcoming Events Calendar

*Club Meetings & Other Significant Events — Subject to Change*

March 3 <sup>rd</sup>	WASH Meeting & Pizza Night	St. Clair Hospital Outpatient Center, 2000 Oxford Drive, Bethel Park
March 5 <sup>th</sup> — 6 <sup>th</sup>	ARRL DX Contest SSB	<a href="http://www.arrl.org">http://www.arrl.org</a>
March 12 <sup>th</sup> — 13 <sup>th</sup>	Stew Perry Topband Challenge	<a href="http://www.kkn.net/stew">http://www.kkn.net/stew</a>
March 12 <sup>th</sup>	Breezeshooter's Groundwave SSB	<a href="http://www.breezeshooters.org">http://www.breezeshooters.org</a>
March 26 <sup>th</sup> — 27 <sup>th</sup>	CQ WPX Contest SSB	<a href="http://www.cqwpix.com/">http://www.cqwpix.com/</a>
April 7 <sup>th</sup>	WASH Meeting	St. Clair Hospital Outpatient Center, 2000 Oxford Drive, Bethel Park
April 14 <sup>th</sup>	WASH VEC Exam	WPXI Community Room, 4145 Evergreen Road, Pittsburgh PA
April 24 <sup>th</sup>	Two Rivers ARC Hamfest	<a href="http://www.trarc.net/home">http://www.trarc.net/home</a>
May 5 <sup>th</sup>	WASH Meeting	St. Clair Hospital Outpatient Center, 2000 Oxford Drive, Bethel Park
May 20 <sup>th</sup> — 22 <sup>nd</sup>	Dayton Hamvention 2016	<a href="http://hamvention.org/">http://hamvention.org/</a>
June 2 <sup>nd</sup>	WASH Meeting	St. Clair Hospital Outpatient Center, 2000 Oxford Drive, Bethel Park
June 5 <sup>th</sup>	Breezeshooter's Hamfest	Big Butler Fairgrounds, 1127 New Castle Road (US 422), Prospect PA 16052
	WASH Picnic @ Breezeshooter's	
June 25 <sup>th</sup> — 26 <sup>th</sup>	ARRL Field Day	<a href="http://www.arrl.org">http://www.arrl.org</a>
July 1 <sup>st</sup>	WASH Meeting	St. Clair Hospital Outpatient Center, 2000 Oxford Drive, Bethel Park
July 21 <sup>st</sup>	WASH VEC Exam	WPXI Community Room, 4145 Evergreen Road, Pittsburgh PA
August 4 <sup>th</sup>	WASH Meeting	St. Clair Hospital Outpatient Center, 2000 Oxford Drive, Bethel Park
September 1 <sup>st</sup>	WASH Meeting	St. Clair Hospital Outpatient Center, 2000 Oxford Drive, Bethel Park
October 1 <sup>st</sup> —2 <sup>nd</sup>	51 <sup>st</sup> California QSO Party	<a href="http://www.cqp.org/">http://www.cqp.org/</a>
October 6 <sup>th</sup>	WASH Meeting	St. Clair Hospital Outpatient Center, 2000 Oxford Drive, Bethel Park
October 8 <sup>th</sup> — 9 <sup>th</sup>	59 <sup>th</sup> Pennsylvania QSO Party	<a href="http://www.nittany-arc.net/PAQSO.html">http://www.nittany-arc.net/PAQSO.html</a>
October 20 <sup>th</sup>	WASH VEC Exam	WPXI Community Room, 4145 Evergreen Road, Pittsburgh PA



## *"Seen" at the February Meeting*

Photos Courtesy of and © Copyright 2016 Ron Notarius W3WN





# Improving the 2 Meter Repeater Receiver

Jim Sanford WB4GCS

**Initiation Date:** 13 February 2016

**Participant(s):** N3FB, WB4GCS

**Initial Symptoms:** Ever since being relocated to St. Clair Hospital, the 2m Repeater has not been hearing well. An earlier effort found a bad preamp, which was removed. This caused some improvement, but the repeater still talks better than it hears.

**Actions:** Review the Motorola manual and specifications. The tuneup procedure is not particularly difficult. Specifications, for a receiver without the preamp note 0.5 uV for 20 db of quieting. Given this, it may be hearing as well as ever intended (there is no preamp in the repeater.)

Market research for a suitable preamp with low noise figure did not go well. The device for the hamtronics preamp removed from the repeater was unable to be determined. Ran across a data sheet for PGA-103 from Mini-Circuits, which has low noise figure, high gain, and high output power/IP3. Purchased an evaluation module to avoid the need to design/build a circuit board.

**Observations:** N3SH/R has not been hearing well.

After tuning duplexer, WB4GCS could not bring up the repeater from home in either the mobile or base station with 35 Watts to an omni-directional antenna at 25 – 30 feet.

The receiver preamplifier had problems. When measured, it had 40 db gain and 23 db noise figure. It was decided to not reinstall the preamp. (Reference: WB4GCS Lab Notes, 31 October 2015)

The purchased preamplifier was measured at 18.28 db and noise figure of 0.17 db. The NF is probably unrealistically low, most likely due to not having calibration data on the noise source below 1 GHz. Specifications claim 0.5 db NF at 2 meters, so it is probably performing to specifications.

**Analysis:** Author learned from the Microwave Reflector that measured very high gain with very high noise figure is a known failure mode (in addition to the mode of just not working.)

The repeater continues not hearing well, albeit better than with bad preamplifier installed.

The purchased preamplifier has excess gain. The high IP3 and power out suggest that it will survive the other nearby transmitters without going non-linear and generating intermodulation products. However, it can provide strong off-channel signals to the repeater receiver causing overload or intermodulation products within the receiver. The excess gain should be reduced.

**Hypothesis:** The preamplifier removed from service was bad.

Since there is no Motorola preamplifier in the receiver, it may very well be hearing as well as it was designed to.

The purchased preamplifier can help, by having low enough noise figure and high enough gain that the system noise figure will be set by the sum of feedline loss and duplexer loss. It will improve weak signal performance, but without degrading the minimum detectable signal by adding additional noise.

## Plan:

- ♦ Measure and document as-is receiver performance.
- ♦ Perform OEM receiver alignment procedure. Ignore steps to back out inductors to a fixed position because this is a "touch-up", not an initial alignment.
- ♦ Measure and document re-tuned receiver performance.
- ♦ Evaluate.
- ♦ Depending on results of the evaluation, install the purchased preamplifier. To tame excess gain, put an attenuator downstream of the output. To prevent sending amplified off-channel signals to the receiver put the previously tuned pass cavity in line downstream of the preamplifier. Cavity loss is -0.5 db. (Reference: WB4GCS Lab Notes 31 October 2015) This loss will be insignificant due to the gain in the preamplifier ahead of it. This loss will also tame 0.5db of the excess preamplifier gain.
- ♦ Evaluate. Make a determination as to whether or not to leave the preamplifier installed or return the receiver to its native configuration.
- ♦ Make measurements for cable lengths needed to eliminate temporary adapters and order.

## Results:

- ♦ Measured as-is receiver performance was 0.4 uV for minimum usable signal, determined by ear. Test set limitations included lousy speakers on both test sets and inability to measure quieting. No signal second limiter reading was 13 uA.
- ♦ After tuning of the receiver, minimum usable signal was 0.39 uV – statistically insignificant difference. Qualitatively, we think we made an improvement, but small.
- ♦ Install the preamplifier and pass filter downstream. Minimum usable signal is now 0.1 uV, a significant improvement (6db) and consistent with our experience with sensitive FM receivers. Potential for overload and intermod still exists. No signal second limiter reading 36 uA – suggests excess gain.
- ♦ Install 6db attenuator downstream of preamplifier, upstream of the filter. Minimum usable signal remains 0.1uV. No signal second limiter reading 36 uA – still a bit of excess gain. Connecting antenna yields second limiter reading of 38 uA – receiver is quieter than ambient noise – this is as good as it gets.
- ♦ Check for desensitization of the receiver by the transmitter. Keying transmitter only raises second limiter current by less than 0.5 uA.
- ♦ A few on-the-air checks among WB4GCS, N3FB, and KE7FD **suggest** that it is hearing better. It still appears to be talking better than it is hearing – it is easily copyable (if not full quieting) in areas where the listener is difficult to understand through the repeater.
- ♦ Monitoring over 24 hours has not detected any instances of intermod. (It could be there and masked by the tone squelch.)
- ♦ Cable lengths measured, RFQ submitted.

**Conclusion:** The repeater was probably hearing as well as it was capable of hearing.

Re-alignment made insignificant improvement, but did provide confidence that it was hearing as well as designed.

Installing the preamplifier made a significant difference, but did not cause desense.

When we go back to install the permanent cables, we should make some more measurements and tweak the attenuator value so that the duplexer/preamp set the noise floor, and we only have a db or so of excess gain to account for aging. It would be nice to split the attenuation between input and output of the pass filter, so it sees a solid 50 ohms on both sides.

Once in final configuration, we should recheck the minimum usable signal.

*Photos of Jim WB4GCS working on the N3SH/R Repeater Rack are courtesy of and © Copyright 2016 Frank Bobro N3FB*



## *The Further Radio Adventures of Carl & Quinn* Lynn Richards P51/AAA2ZZ

**T**he Hamvention in Dayton was only one day away. Quinn was at the back door of my house with his beat up black Yaesu cap nearly pulled over his eyes, and giddy as a school kid on too much sugar. As I came to the door he could hardly contain himself spouting out, "I got the whole weekend off of work and can leave as soon as you can. When we gonna go Carl?"

People who were acquainted with Quinn knew not do anything that might encourage his unusual excitement. Failing to observe this caution would be like throwing gasoline onto an open fire or... giving more sugar to a kid who was already bouncing off the walls.

"Oh, I think I'll be ready to go in a couple of hours. I'm glad you didn't cut too close telling me if you could go or not," I said to him knowing that my foresight to reserve a room with two beds, would probably pan out. There was that one year we just went to Dayton without making reservations because Quinn said he knew a guy who knew another guy who had extra rooms reserved and we didn't

need to get our own. Quinn heard wrong and we didn't find any rooms available within 50 miles of Dayton. Since I'm on the 10-year plan, that trip left me in a very grumpy mood the next day with having to walk in my sleep through the tailgaters. I missed a great deal on that trip and decided this year to make reservations early, like, December.

"So Quinn, you remember how to get there, right?" I asked him.

"Oh sure Carl, I got a built-in direction finder in my head," he chimed back.

"OK, well, we'll use this new GPS unit I got on sale at Z Mart. They were practically giving them away." I made sure to let Quinn know I had gone to Z Mart because I know he hates going there.

"Ugh! I hate Z Mart. You know my ex works for them..."

"Yes, I know. You've told me that at least five times." It was more like 500 times. "And she's their regional manager now with a company car, a big salary and still hates radio."

"Yeah, yeah, yeah, you've told me. So Quinn, not to change the subject and all, but, what's at the top of your list for Dayton?"

"Oh! Well, I picked up another issue of the QST where Bob Bruninga, WB4APR, Mr. APRS himself explains how it works, and I'm gonna have him autograph it. It'll be worth a lot of money some day. I hear he's gonna do a forum on APRS too."

"Really?"

"Oh sure. He's got all sorts of ideas and people haven't even scratched the surface of what it can do. It's on all the blogs. Oh yeah, he's got quite a following."

"Kind of like the Great Pumpkin then?" I asked as we hefted a large ice chest into the back of my SUV.

"Yeah, kinda like tha...No, wait a minute."

By 19:00 hours we were on our way to Dayton with all the gear connected and antennas blazing. We were working the Gray Line on 14.195 MHz and exchanging DX spots on APRS with other Hamvention bound mobiles. We were having such a good time that we didn't notice when we passed the Dayton turn-off and continued on down some country back road. It wasn't until my smart phone reprogrammed the D700A that we realized the repeaters we were now hitting had distinctly different call signs than what would be expected near Dayton.

"Carl, where're we?"

"Well, I dunno. Check the GPS." I said wishing now I had read the manual.

"Not sure but I think it's saying we're in Tuzigoot." Quinn replied. To which we both looked out around us into the night and saw only a solitary light atop a microwave tower flashing in the distance."

"Tuzigoot? Quinn, lemme see that thing" as I rotated the GPS display towards me. In doing so I noticed a small plastic tab protruding from the side of the unit with some writing on it. It was a small tab, hardly noticeable. I pulled it out and read, "Please to remove up on use. Follows Instruction for calibrate." I looked at the manual while Quinn looked at his watch, which in honor of the Hamvention he had set to UTC then after several moments announced, "I think it's like 2:03 in the a.m." I had no idea where Tuzigoot was and resorted to the Rand-McNally book behind the driver's seat. "Hey Carl, we must be near some train tracks. Look for tracks on the map." We could both hear a train coming but saw no lights, just some rain then hail...

Two days later, a crew from a local power company found us hanging from a Red Maple tree 15 feet off the ground. The amazing thing about our little adventure was that when the tornado deposited the SUV in the tree, the dexterity of the wind was so precise that had it been off by as much as an inch, the cherry picker that the power company used to put us back on the ground would not have been needed.

Now late morning, we stepped out of the SUV onto solid but littered ground, having hung face down for two days, strapped into our seats, and all we could do was take turns seeking privacy behind the only remaining bush for miles around to get rid of the cans of soda we consumed. After surveying our surroundings, and the mangled antennas on the SUV we looked at each other and decided to skip Dayton this year and drive straight home. There was always next year.

Many amateur radio operators are rejoicing about the new worldwide 60 meter band, 5351.5 to 5366.5 kHz with 15 Watt limit, forged at the recent World Radio Conference WRC-15 in Geneva. However, in countries where 5 MHz channels already exist with 100 Watt power limits (or more) the hams are worried. They don't want their successful legacy allocation taken away. They protest that the extreme low power limits are totally insufficient to provide dependable SSB voice communications, especially in noisy suburban and urban areas.

Also, with a 15 kHz narrow slice of spectrum, hams argue that the mini-band could nearly be wiped out by a high powered primary user's AM or data station, noisy RFI from a power supply, over-the-horizon radars, or intentional jamming. These kinds of interference issues are less of a factor with the widely dispersed existing 5 MHz channels and band segments that already exist in USA, UK, Canada, and Europe.

In USA, before any changes to 5 MHz rules can happen, there will be a Notice of Proposed RuleMaking (NPRM) process with public comment and input, which could take more than a year. It will "open a can of worms" where anything can happen, good or bad. Hams need to start planning now for this.

What would be the best outcome? For USA, the following proposal has merit:

1. Keep four (4) of the present legacy channels with "no changes" :
  - A. Keep existing 100 Watt power level and mode/bandwidth rules.
  - B. Keep existing channels 5330.5, 5346.5, 5371.5, 5403.5 kHz USB.
  - C. Keep existing 2.8 KHz bandwidth, any mode or content.
2. Exchange the present existing 5357.0 kHz channel for the new WRC15 VFO band:
  - A. 5351.5 to 5366.5 kHz
  - B. 100 Watts ERPd
  - C. Bandwidth 2.8 KHz max, any mode or content.

If USA hams can achieve this in the FCC RuleMaking procedure, then the present domestic HF Interoperability for Emcomm can be maintained, as well as providing worldwide and regional service.

— Bonnie Crystal, KQ6XA

**What did  
happen to  
our stalwart  
heroes at  
Hamvention  
2015?**

**Or, for that  
matter, these  
guys...**



## Randy Thompson K5ZD Stepping Down as CQ WW Contest Director

CQ WW DX Contest website [blog](#) & World Wide Radio Operators Foundation

Hicksville, NY, February 9<sup>th</sup>, 2016 — Randy Thompson K5ZD has announced his intention to step down as Director of the CQ WW Contest as soon as a replacement can be found. The decision was due to increasing responsibilities in his professional career. The Director of the CQ WW Contest is responsible for appointing the members of the CQ WW Contest Committee and organizing their work to develop the rules, log checking, and production of the contest results.

Thompson became Director of the CQ WPX Contest in 2008 where he served through the 2012 contest. He was appointed as Director of CQ WW in September 2012. Under his leadership, the CQ WPX and CQ WW contests have improved the log checking process and enforcement actions against rule violations. The Web sites for the two contests were enhanced to include a historical database of all time scores, records, results, and log submission tools.

According to Thompson, "I have enjoyed working on the CQ contests and hope to stay involved with the web sites and log checking. The demands of a new job are preventing me from dedicating the time that the role deserves. With WPX, WW, and WRTC2014 activities over the past 8 years, I am ready for a break. I am very proud of the work the Committee has done in enforcing the rules and feel that contesting results are now more accurate than ever. I look forward to working with the new Director."



Randy Thompson, K5ZD, has been licensed and active in contesting since 1973 at age 13. He is an accomplished contester, having multiple single-operator wins in the ARRL Sweepstakes, CQ World Wide DX Contest, and the CQ WPX Contest, among others. Randy is a past editor of the "National Contest Journal" (a post he has held three separate times) and a co-founder of the eHam.net website. He is a member of the CQ Magazine Contest Hall of Fame. He has competed in five World Radiosport Team Championships and was a member of the organizing committee for WRTC2014. When not in front of a radio, Randy is in product management for a technology company involved in the Internet of Things (IoT).

A description of the CQ WW Director role is listed on the CQ WW website. Anyone interested in being considered for the job should apply by email to [questions@cqww.com](mailto:questions@cqww.com). Questions may also be directed to CQ Amateur Radio publisher Dick Ross K2MGA at [k2mga@cq-amateur-radio.com](mailto:k2mga@cq-amateur-radio.com)

## Is the Woodpecker Returning.. from the Spratly's?

The Center for Strategic and International Studies, a Think Tank, reported in late February that satellite images indicate that China may be installing a High Frequency Over The Horizon Radar System on Cuarteron Reef (now artificially expanded into an island) in the disputed Spratly Island chain.

The report indicates that the system is almost complete, and consists of "two probable radar towers" and a "number of 20 meter poles".

China's Ministry of Defence said in a statement on its microblog that the facilities China had established on the "relevant islands and reefs" included navigation and meteorological equipment. "At the same time, we have deployed necessary defensive facilities on the islands," the statement added, adding the facilities were "legal and appropriate".

Chinese Foreign Ministry spokeswoman Hua Chunying, asked about the report, said she didn't know any details, but that China had every right to build on its own territory and deploy "limited" defensive means there.

The world should pay more attention to the civilian facilities China has built like lighthouses, Hua told a daily news briefing.

The full report can be found at <http://amti.csis.org/another-piece-of-the-puzzle/>

More information on this story can be found on the Reuters web site at <http://www.reuters.com/article/south-china-sea-china-radar-idUSKCN0VW096>



## Final Scores, 2016 WASH 2 Meter Simplex Contest

Jim Sanford WB4GCS, 2 M Simplex Contest Chair

The contest participation was sparse this year; hopefully an anomaly.

Still, I had a lot of fun! Hope you who participated did as well.

Several people used the excel spreadsheet intended to make logging easier. Look for improvements next year -- easier to use and more automation. I am seeking feedback/suggestions on the spreadsheet as well as on the contest rules or practices.

Call	Total Score	Call	Total Score
KA3KSB-M	1596	WB4GCS	342
N3FB	1152	KB3YCX	224
KC3EDQ	1092	W3WN	198
N3SBF	1026	KC3FIQ	180
KB3GMN	1026	N3IDH	54
K3VX	758	N3LZV	24
K3HCR	612	WO3X	16
		KC3TOM	16



I am humbled and honored by the award at the last meeting -- still a bit stunned.

It now resides in a place of honor in front of something I received when I left the Navy.

— Jim Sanford WB4GCS



# *The Orbiting Dead: Arkansas VHFer Claims “Mathematically Impossible” Mode B Distance Record on Zombie Satellite*

## *AMSAT-OSCAR 7*

American Radio Relay League

Dave Swanson KG5CC1, of Arkansas has achieved another distance milestone on the venerable AO-7 satellite using Mode B (70 centimeters up/2 meters down).

On February 10, Swanson, on Shinnal Mountain west of Little Rock (EM34st), completed a scheduled contact with Eduardo Erlemann, PY2RN (GG66lw), a calculated distance of 8030.895 kilometers (approximately 4979.2 miles), which Swanson said was “way beyond the theoretical range AO-7” and a feat that “the math said shouldn’t be possible.”

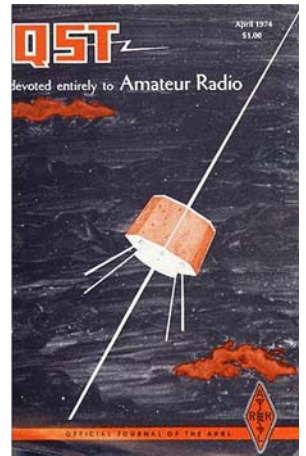
The tricky part was that, given their respective locations in the Northern and Southern hemispheres, the window allowing both to access the satellite at the same time was on the order of 5 seconds. After several attempts, they agreed to use quick call sign/grid square reports.

“At 2009 UTC, both stations clearly heard the other’s call and grid, completing the contact,” Swanson said. “It was extremely rapid and very weak, but clear...I think this is approaching the limits of what can be done on AO-7.” PY2RN has [posted](#) his side of the contact, which Swanson called “by far the hardest sked I’ve ever attempted.”

Launched November 15, 1974 as the second AMSAT Phase 2 ham satellite, [AMSAT-OSCAR-7](#) (AO-7) has been nicknamed the “zombie

of the Amateur Radio satellite world. AO-7 went silent in 1981 after 7 years of service, only to spring back to life in 2002 (and possibly earlier, and simply it was never noticed). Theories are that the satellite went silent when it’s internal batteries failed. At some point, the batteries or some other part of the power charging circuit shorted, which enabled an unexpected direct connection between the solar panels and the rest of the satellite. AO-7 now only operates when it’s receiving direct sunlight, and shuts down when it is in an eclipse or the Earth’s shadow. Since the satellite became undead, terrestrial users have enjoyed numerous contacts via AO-7.

When it comes to life, AO-7 can be found on either Mode A or Mode B. It has an operational beacon on 29.502 MHz when in Mode A, 145.972 MHz when in Mode B, and an intermittent one on 435.100 MHz.



Established less than 1 year ago, AMSAT’s all-volunteer [Phase 4 Ground Terminal](#) team has made significant strides in developing an ensemble of solutions to support the so-called “Five and Dime” (5 GHz and 10 GHz) strategy AMSAT has embraced for microwave satellite projects. Prompting the effort is the planned launch of a geosynchronous military satellite in the 2018 timeframe, which could play host to an Amateur Radio payload operating on the two microwave band. The overarching project, which also includes a complementary Phase 4 Space team, is exploring new territory and innovative solutions, and it’s seeking [volunteers](#) from among the technically savvy within the Amateur Radio community.

“We’re going to make it as awesome as possible,” Ground Station team lead Michelle Thompson W5NYV, told ARRL. The project not only would support the Phase 4B geosynchronous launch but provide solutions for the Phase 3E high-Earth orbit satellite, and receiver support for AMSAT’s entry into the NASA Cube Quest Challenge, which would go to the moon.

Thompson said the compelling technical reason for using 5 GHz and 10 GHz is the ability to use high-bandwidth modes on those bands. In addition, “the 5 and 10 GHz bands are popular elsewhere, and other projects are embracing this band complement,” she noted. Another advantage would be to raise Amateur Radio’s profile on the two bands and perhaps “shake things up” there for terrestrial use. “The 5 and 10 GHz bands are a compromise that’s working really, really well,” Thompson said.

The US Air Force will control the geosynchronous satellite. Virginia Tech, Millennium Space Systems ([MSS](#)), FEMA, various clubs as well as AMSAT and ARRL are partners in or are supporting the project. A formal memorandum of understanding is pending.

### **Cognitive Radios**

“We’re currently exploring the Amateur Radio implementation of a very advanced and exciting open standard called DVB-S2X for the downlink,” Thompson explained, noting it offers a variety of modulation and coding. Earth stations will use their individual radios, transmitting a digital signal — probably something called Offset QPSK (O-PSK) — directly to the satellite, with each getting its own channel in a frequency division, multiple access (FDMA) scheme. “This is an elegant way to design an efficient and advanced communication system and allows technical volunteers to experiment with the basics of cognitive radio — radio that can sense the environment and adapt to take full advantage of the capabilities the hardware offers,” she said.

### **Groundsats and a “Big Honking SDR”**

Phase 4 radios will be designed to work not just with the impending geosynchronous satellite but through terrestrial microwave “Groundsats,” which, Thompson said, “are essentially satellite simulators that let you test and use the radio terrestrially.” Phase 4 radio designs also could be configured to use modulation schemes that are better able to deal with terrestrial multipath.

Amateur Radio Access Points (ARAPs) — essentially signal aggregators — would allow legacy radios, FM hand-held transceivers, or emergency traffic providers to use the satellite from any point where an ARAP can be deployed, packaging the input for uplink to the satellite. Hams within ARAP range would be able to use the Five and Dime terrestrial network just as if they were operating through a satellite.

“The Groundsat, which is doing the same job as the satellite payload, has a big honking SDR on it,” Thompson said. Groundsat equipment has arrived and is in use in San Diego, North Texas, and at Virginia Tech, and Groundsat development is under way at those sites. A fourth site would be at Morgan State University in Maryland.

### **Doing It on the Cheap**

“Five and Dime” also reflects the project’s economics. AMSAT Board Member and Virginia Tech Research Professor Bob McGwier, N4HY, recently explained on the AMSAT-BB that the Ground Team’s work is “an effort to design an inexpensive ground terminal for amateurs that would cost tens of thousands of dollars commercially, for as much under \$1000 as we can get it.” In contrast to the Space Team’s work, which, he said, is taking place “under the cloak of ITAR (International Traffic in Arms Regulations),” the Ground Team’s SDR is “completely open source, open specification” and “easily reprogrammed to do many different kinds of missions just by changing the software.”

“We welcome any interested technical volunteers to apply to the technical volunteer program at AMSAT and become part of the team,” Thompson said. To volunteer for the Phase 4 Ground Team, provide your contact information on AMSAT’s Engineering Team [contact form](#). Thompson’s weekly “Phase4” engineering updates are available via YouTube. Additional [development documentation](#) is posted on GitHub.





## Rufus Turner W3LF

American Radio Relay League

The computer hardware/software/do-it-yourself blog *Hackaday* has [profiled](#) Rufus Turner, W3LF (ex-K6AI) — the first African-American radio amateur and one of the more fascinating personalities in US history. Born on December 25, 1907, in Houston, Texas, Turner “became fascinated by crystal diodes and published his first article about radio when he was 17,” according to *Hackaday*. He went on to build what *Hackaday* described as “then the world’s smallest radio set” in 1925, while still a teenager.

In the day when radio amateurs still were allowed to broadcast, W3LF became the first radio station licensed to an African-American. He broadcast with a 15 W in Washington, DC, and operated another radio station for his church.

Working with Sylvania in the 1940s, Turner helped to develop the 1N34A germanium diode. And in 1949, he wrote “Build a Transistor” for Hugo Gernsback’s *Radio-Electronics* magazine ([May 1949 issue](#), p 38) — at a time when transistors (aka “crystal triodes”) not only were cutting edge but not commercially available. His meticulously described project involved the sacrifice of two 1N34A diodes.

In January 1950, his article, “A Crystal Receiver with Transistor Amplifier” appeared in *Radio and Television News*, along with plans for a three-transistor radio. This was in the days before such things had begun to appear on the market.

While he had attended Armstrong Tech in Washington, DC, and he became a licensed professional engineer, he veered into the non-technical sphere of academe later in his life, earning bachelor’s and master’s degrees in English, and in 1960 — at age 52 — he became an English professor at California State College, where he’d obtained his BA. He pursued a PhD in English at USC, with his thesis analyzing the life and literary output of 18th century romantic Charlotte Turner Smith.

He taught until 1973, but continued to write electronics articles. He died in 1982, the same year his *The Illustrated Dictionary of Electronics* appeared in print.

— Thanks to *Hackaday*, *Southgate Amateur Radio News*, *Radio-Electronics*. Photo courtesy of the American Radio Relay League



Rufus Turner W3LF, 1926

## D-Star vs. Fusion vs. What Next?

William Pietschman W8LV courtesy of [eHam.net](#)

Look, I really LIKE the idea of going digital. And I can see good things in BOTH systems. Fine. Great. And PLEASE tell me what I am missing here.

But what I am sure of is: We can't shut analog out. And we cannot have two incompatible systems coexisting. This isn't going to work. It's not like when you put in a commercial system, where a major metropolitan area, or an entire state goes with a particular commercial system. And even that transition is a MESS... you see the obvious problem at a fire site when you see firemen carrying three radios to.... communicate! Until they all get on one system and talk-group.

If I leave my home in Ohio, to work portable in Oregon, Mississippi, or California, my radio has to WORK. ONE radio. That works everywhere! We could do that with analog and PL tones. -- But with this?

Furthermore, I can't make the financial investment in two systems. And this is starting to look like a VHS vs. Betamax CLUSTER.

How many of us are sitting on the fence, and not buying ANY VHF/UHF equipment whatsoever, because nobody wants to get the short end of the technology stick? And how is this helping anybody in the industry? Or ARES? Or the ham community at large?

Meanwhile, back at Analog Ranch, cheap Analog Chinese Radios...work. With ANYTHING and everything Analog. Always. Every time. Good thing, especially for the newbie with the Chinese HT. BUT...this ALSO holds things back, just in another way!

It's not enough to be able to talk "through" a digital system, either one, with A to D, or vice versa. And no "box" to talk between System Fusion and D-Star, or cross link between repeaters using either system?

This is not good. At least that's my take.

What do YOU think?

## Status of Ten-Tec

Mike Dishop N8WFF, Owner & President, Ten-Tec, a Dishtronix Company courtesy of [grz.com](#)



Bellefontaine, OH, January 27<sup>th</sup>, 2016 — Ten Tec is recovering and sustaining itself at this point!

The commercial business is allowing us to continue in the amateur market, just as it has fueled Ten Tec's success in decades past.

I'm pleased to announce Robert Marine is rejoining the staff Monday for three days per week and will be replying to service emails and parts request. We almost have the phone situation figured out and I expect to have telephones online sometime in February.

We are also working on changing over the shipping accounts. Eventually we should have service back and running smoothly. If you have never operated a business you have no idea of all of the details that have to be ironed out. For example, I just got regular payroll checks and direct deposit fixed up yesterday. I personally pay the people at Ten Tec out of my own pocket regardless if they make money or not.

If I could just drop one other point in here, we do not charge you for a phone call to ask a simple question or to get you some parts. I don't know where people are getting that idea. Also people show some discretion. Bothering (consultant and former chief engineer) John Henry K14JPL about a part for your radio is UNACCEPTABLE! Please be patient until we get the service department open, and most of you have been really great. I want to thank those of you waiting patiently and assure you that we are making headway and will be helping you again in February.

I'd like to ask those of you out there to do something for me. When you get a radio fixed or a part fixed or whatever and it is a good Ten Tec experience, if I or the company has done anything that helped you please post about it. If you agree with what I'm doing we appreciate positive posts too. Your positive comments sure help bury the complaints from some of the axe grinders of the past.

It is a new day at Ten Tec. New management. New Ideas. New products. Ten Tec builds a pretty good radio, and it would be a shame to scare someone off who hasn't tried one. Rome did not burn in a day and Rome was not rebuilt in a day. I'd like to remind people it has only been 27 days....

*Editor's Note:*

Since this was posted on the forums, Ten Tec has released new firmware updates for several radios, and the service department is open for business again.

These updates can be found on the "temporary" Ten Tec web site at [www.tentec.com](http://www.tentec.com), and also via the Ten Tec forums

## Lifetime Licenses?

American Radio Relay League

Newington, CT, February 24<sup>th</sup>, 2016 — The FCC is seeking comments on a *Petition for Rule Making* ([RM 11760](#)) that asks the FCC to grant lifetime Amateur Radio licenses.

Mark F. Krotz, N7MK, of Mesa, Arizona, filed his request with the FCC last November. He wants the FCC to revise § 97.25 of its rules to indicate that Amateur Radio licenses are granted for the holder's lifetime, instead of for the current 10 year term. Krotz noted that the General Radiotelephone Operator License (GROL) already is issued on a lifetime basis, and he maintained that not having to renew licenses would lighten the FCC's workload.

"It would be mutually beneficial for the FCC and Amateur Radio operators to update Part 97 to grant operator licenses for lifetime, Krotz said in his filing. "The FCC would benefit by reducing administrative costs."

In 2014 the FCC granted lifetime credit for examination elements 3 and 4, but applicants seeking relicensing under that provision still must pass examination element 2.

Individuals may [submit](#) comments via the FCC's Electronic Comment Filing System (ECFS).

A flea-powered transistorized ham transmitter built in the 1950s and used to make a transatlantic contact has become part of the ARRL Historical Collection.

The noteworthy historical artifact was donated by Andy Stewart, KB1OIQ, on behalf of the estate of Gus Fallgren, W1OG (SK), the ham at the key for the momentous event. Fallgren — then W1OGU — and two other Raytheon Engineers, Al "Hank" Hankinson, W1OSF, and Dick Wright, W1UBC, built the little transmitter in the summer of 1956 on a lark, to see if they could achieve Work All Continents (WAC) with it.



The 20 meter, 78 mW transmitter was designed around a pair of Raytheon 2N113 transistors — one as a 7 MHz oscillator, the other as a frequency-doubling power amplifier. On September 18, 1956, Fallgren, in Chelmsford, Massachusetts, running the transistor transmitter into a 3 element wide-spaced Yagi, worked OZ7BO in Copenhagen, Denmark. His signal report was 339.

The transmitter was the first to run Raytheon transistors on 20 meters. Hams had previously constructed low-power, solid-state transmitters for 40 meters and made contacts spanning up to 800 miles.

Fallgren's 3800-mile contact worked out to approximately 47,500 miles per watt. Raytheon documented the historic contact in the February 1957 edition of *Radio and Television News* — with a feature banner and cover photo of W1OGU in his shack with the battery-powered transistor transmitter — and it was reported in other publications as well, including Raytheon's own publication and the *Boston Globe*. A November 1956 *QST* "Stray" reported that Fallgren had "worked KP4, TI2, OZ7, and G3, and has reportedly been heard in VK" with the little rig and included a photo.

Assistant ARRL Laboratory Manager, Bob Allison, WB1GCM, staff liaison to the ARRL Historical Committee, accepted the donation.

"We are all delighted that this well-documented transmitter was donated to the ARRL Historical Collection," Allison said. "It tells the story of its important role in the development of Amateur Radio technology. The ARRL wishes to thank Andy Stewart, KB1OIQ, for arranging this donation."

The donation to the ARRL's collection of Amateur Radio historical artifacts consists of the original transmitter and a 7013.4 kc crystal, the Vibroplex bug used for the contact, W1OGU's station log documenting the contact, newspaper clippings reporting the event, and other ephemera associated with the DX feat.

The transmitter will be placed on display in the ARRL Laboratory, along with the bug, station log, and the issue of *Radio and Television News* with Gus Fallgren on the cover.



## DX News Briefs

"We are happy to inform you that all of the [VP8STI/VP8SGI](#) team members are now home and enjoying their families after 46 days away. We are reading and responding to the many email messages received while we were away. We did not have any internet access during our voyage or while on the islands other than brief BGAN time to upload logs.



We are happy to read that we have largely satisfied the need for contacts and that our results are appreciated. We are grateful for your financial and emotional support.

We have decided to make a change to our previously announced QSL/LoTW policy. We have decided to do a full upload to LoTW as our way of saying "thank you" for everyone's generous support!

We have just completed uploading the entire [VP8STI](#) and [VP8SGI](#) logs to Logbook of the World. Soon, we will upload [VP8IDX](#) and [VP8DRC](#) logs to LoTW as well." — David R. Collingham K3LP & Paul S. Ewing N6PSE

VE3LA will be QRV from Aruba IOTA SA-036 1 – 8 March, as [P4ØM](#) in the ARRL DX Contest (SSB), [P4/VE8DX](#) outside of the contest. QSL via LY5W – DXCoffee

A group of 10 German hams will be QRV "holiday style" as [4S7RTG](#) & [4S7GWG](#) from AS-003 2 – 18 March, 40 – 6 M, CW SSB & RTTY. QSL 4S7GWG via DL2AWG, 4S7RTG via DI7VEE – the team would prefer requests via ClubLog and OQRS. More information at <http://4s.mydx.de/?Home> – 4S7GWG/4S7RTG Team

G3XAG will be QRV as [5X1XA](#) 4 – 16 March. QSL via G3SWH – DXCoffee

The [VKØEK](#) Heard island DXpedition announced on 12 February that they plan to "set sail" from Cape Town on or about 10 March, weather permitting. After arrival, they are expected to be QRV for nearly 3 weeks. The team of 14 ops will have 4 to 6 stations running from Atlas Cover, and 2 at Spit Bay. Their goal is to make at least 150,000 QSOs with at least 50,000 different stations, and they will dedicate one station for those seeking an "all time new one(ATNO)". As part of their fund raising efforts, the "souvenir store" is now available on their website. More information at <http://vk0ek.org/> QSL via MØURX or OQRS – Cordell Expeditions

[FT4JA](#) is expected to be QRV 29 March – 11 April. Their equipment is now enroute to Juan de Nova, and the operators plan to depart for the operation on or about 26 March. QSL route has not yet been announced. More information at <http://www.juandenovadx.com/en/> -- Team FT4JA

[CY9C](#) from St. Paul Island is expected to be QRV 19 -29 August. NØTG reports that "no building use is permitted" as the remaining structures are in "ruined condition." The team of 9 operators have received their landing permit and have the required insurance. More information at <http://www.cy9dpxpedition.com/dpxpedition-site.html> -- QSL via WA4DAN although OQRS via ClubLog will be preferred -- NØTG

## QSL Routes

3D2KM via W6ZL – JA1HGY	P4ØMA via OH1MA – JA1HGY
3W3MD via IK2VUC – JA1HGY	SUØIARU via OM3CGN – JA1HGY
3W4VX via JF1OCQ – JA1HGY	T2GC via LZ1GC – LU2DKN
6Y4K via VE3NE – JA1HGY	T46BC via IZ1GDF – JA1HGY
6Y9X via KQ1F – JA1HGY	TZ4AM via W4VAB – JA1HGY
7QAA via N7RO – W4FOA	V5/DK1CE via DK3WO – JA1HGY
A35JP via JAØRQV – JA1HGY	V6WW via JA2NQG – JA1HGY
FM5FJ via KU9C – KU9C	V73D via DL4SVA – LU2DKN
HC1PF via IV3PRK – JA1HGY	VK9WA via N7SMI – LU2DKN
J64SLI via WB5Q – NKØS	XR3MIN via XQ4CW – JA1HGY
KH6/K1ZT via JE1SPY – JA1HGY	YJØAFU via NA5U – JA1HGY
KP2Q via K3TEJ – JA1HGY	ZD7W via W6NV – JA1HGY
LX9YL via LX2A – JA1HGY	ZF2MJ via N6MJ – JA1HGY

If you've downloaded the [WASHRag](#) from the N3SH web site, or picked up a copy at [WASHFest 2016](#)... you can sign up to have the PDF copy sent directly to your email. You **do NOT** have to be a member of [WASH](#)!

Just send an email to [wa3sh-subscribe@yahoogroups.com](mailto:wa3sh-subscribe@yahoogroups.com) and the automation should take care of the rest!

Thanks to the NJDXA DX News Reflector, the DX-QSL Reflector, 425 DX News, OPDX News, DX Coffee, DX World.Net, ICPO Bulletin, & ARRL DX Bulletin for our DX News information. Thanks also to the ARRL DXCC Desk, & Bernie McClenny W3UR / The Daily DX for confirmations & additional information.





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The new Amateur Extra class license examination question pool, effective from July 1<sup>st</sup>, 2016, through June 30<sup>th</sup>, 2020, is now available at the National Conference of Volunteer Coordinators ([NCVEC](http://www.ncvec.org)) website.



The latest revision contains a few minor corrections that had been released in a February 5<sup>th</sup> errata of the initial January 8<sup>th</sup> release. NCVEC Question Pool Committee Chair Rol Anders, K3RA, said the new pool represents a fairly significant change relative to the current question pool, which expires on June 30<sup>th</sup>.

"The primary change is modernization of the pool to place more emphasis on digital communications, digital test equipment, software defined radios, and propagation/space weather," he said. "Also, a number of other topics were added, including questions on some additional antenna types commonly used by radio amateurs." Anders said that room to cover the new topics was made in the question pool by dropping some questions that had been in the expiring pool.

"Many of the questions removed were on topics which were felt to be of less importance to the current amateur population," he said. "However, there was also some 'evening out' of difficulty in the removal of a number of questions felt to be inappropriately easy or difficult relative to the rest of the pool." As a result, he said, the net number of questions grew from 700 to 712 questions.

All questions in the expiring pool were re-evaluated for possible clarification or improvement, and approximately 60 questions were slightly modified.

"All in all, the Question Pool Committee has worked to keep the Amateur Extra class exam up to date, to provide a high-quality examination, and to ensure that the incoming Extra class amateurs are well-qualified to be leaders in the hobby," Anders said.

The entire 140-year oeuvre of *Popular Science* magazine has been [archived](#) for free browsing, thanks to a partnership with Google. Popular Science includes some Amateur Radio-related articles, such as "You Can Talk Around the World" in the January 1932 edition, "Thousands of Radio Amateurs Find it Easy to Learn Morse Code" from the March 1932 edition, and "The Hams Join Up" from the November 1941 edition. Many other articles deal with radio and radio repair as well as do-it-yourself electronics projects

## FCC FCC News

Courtesy of the American Radio Relay League

Newington, CT, February 23<sup>rd</sup>, 2016 — The FCC has put the ARRL's January *Petition for Rule Making* ([RM 11759](#)) on public notice and invited interested parties to comment on what the League has called "minimal but necessary changes" to 80 and 75 meters. The ARRL petitioned the FCC to fix a "shortfall in available RTTY/data spectrum" that the Commission created when it re-apportioned 80 and 75 meters 10 years ago.

The League's petition asked the FCC to shift the boundary between the 80 meter RTTY/data subband and the 75 meter phone/image subband from 3600 kHz to 3650 kHz. The proposed change received strong support from ARRL members, and the ARRL Board of Directors adopted it as policy at its July 2015 meeting. At that time the Board also agreed to seek RTTY and data privileges for Novice and Technician licensees within their current 15 meter CW subband, and to do the same on 80 meters, depending on the outcome of the 80/75 meter subband revision.

The petition asks the FCC to make the following changes to the Part 97 Amateur Radio Service rules, with respect to 80/75 meters:

- Modify the RTTY/data sub-band, so that it extends from 3500 kHz to 3650 kHz.
- Modify the phone/image sub-band, so that it extends from 3650 kHz to 4000 kHz.
- Make 3600-3650 kHz available for General and Advanced Class licensees, as was the case prior to 2006.
- Make 3600-3650 kHz available to Novice and Technician licensees for telegraphy — consistent with existing rules permitting Novices and Technicians to operate CW in the 80, 40, and 15 meter General and Advanced RTTY/data subbands.
- Modify the rules governing automatically controlled digital stations (ACDS), to shift the ACDS segment from 3585-3600 kHz to 3600-3615 kHz, consistent with the IARU Region 1 and 2 band plans.

According to the ARRL, the FCC *Report and Order* in Docket 04-140 released in 2006 departed substantially and without justification from the rules proposed in the FCC's so-called "Omnibus" *Notice of Proposed Rule Making* (NPRM), with respect to 75 and 80 meters. Among other actions, the resulting changes expanded voice privileges on additional frequencies in various bands, including 75 meters. The FCC shifted the phone/image subband from 3750-4000 kHz to 3600-4000 kHz, trimming the 80 meter RTTY/data subband from 3500-3750 kHz to 3500-3600 kHz and substantially changing "the entire dynamic of this band," the League said.

Although the Omnibus *R&O* had indicated that incumbent licensees would not lose any operating privileges, some clearly did, the ARRL has pointed out. The most substantial adverse effect of the "unexpected and vast expansion" of the 75 meter phone/image subband, the League said, was the elimination of access to 3620-3635 kHz by ACDS.

The Omnibus *R&O* rule changes limited 80 meters to 3500-3600 kHz, and no longer authorized RTTY and data emissions above 3600 kHz. That the Omnibus *R&O* did not modify § 97.221 of the rules to provide for ACDS "was clearly an oversight by the Commission."

After the FCC denied a subsequent ARRL *Petition for Reconsideration*, the Commission replaced the inadvertently deleted 3620-3635 kHz ACDS segment with 3585-3600 kHz.

"Far from fixing the problem created by the error in the Omnibus *R&O*, the moving of the inadvertently deleted digital subband downward in frequency below 3600 kHz made the situation in the 80 meter RTTY/data subband even worse than it was," the ARRL said. The result has been a shortfall in available RTTY/data spectrum at 80 meters.

"ARRL has analyzed the regulatory limitations as part of a comprehensive effort to make more efficient the use of those HF allocations, especially with respect to encouraging further experimentation and proficiency in narrowband digital communications technologies," the League said in concluding its *Petition*. "The recommendations for modified band plans developed by ARRL necessitate the few, but important regulatory changes proposed."

**Has Roadway found the tower yet?**



# WASHfest 2016

The South Hills Hamfest — Now in our **TWENTY FIRST** big year!

Sponsored by the WIRELESS ASSOCIATION OF SOUTH HILLS AMATEUR RADIO CLUB, INC.

**Breakfast & Lunch will be available!**

Sunday, February 28<sup>th</sup>, 2016  
8:00 AM until 3:00 PM Rain or Shine (or Snow!)  
Castle Shannon VFD Memorial Hall  
3600 Library Road (State Route 88), Castle Shannon, PA  
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**DXCC Card Checking Available!**

Thanks Allen Carpenter W8OP



*FREE Coffee for the entire Hamfest*  
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## MAIN PRIZES — You've Got to Play to WIN!



- 1<sup>st</sup> Prize: Yaesu FT-991 100 W HF/6M Transceiver  
2<sup>nd</sup> Prize: Yaesu FT-2900R 75 W 2M FM Transceiver  
3<sup>rd</sup> Prize: West Mountain Radio ClearSpeech Speaker

**Additional Hourly Door Prizes! Special Black Box Prize (Separate Drawing)!**

Main Prize tickets are \$2.00 each, 3 for \$5.00, 7 for \$10, 15 for \$20

**All Prizes Subject to last-minute changes**

For Table Reservations, or More Information, Please Contact:

Carol Danko KB3GMN at (412) 884-1466 [n3sbf@comcast.net](mailto:n3sbf@comcast.net)

E-mail us directly at [washarc@yahoo.com](mailto:washarc@yahoo.com) Check out our website too! [www.n3sh.org](http://www.n3sh.org)

**Please Note:** Early Table Reservations must be paid in full on or before January 31<sup>st</sup>, 2016.

Reservations received after February 1<sup>st</sup>, 2016 must include payment in full.

Reserve now... we have sold out in advance six years running!

Hamfest Table Reservation Form—Please PRINT LEGIBLY ALL INFORMATION

Name: \_\_\_\_\_ Email: \_\_\_\_\_

Address: \_\_\_\_\_ Phone: ( ) \_\_\_\_\_ - \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Call Sign: \_\_\_\_\_

Tables WITH Electricity: \_\_\_\_\_ X \$15.00 = \_\_\_\_\_

Tables WITHOUT Electricity: \_\_\_\_\_ X \$12.00 = \_\_\_\_\_

**5 Or More** Tables w/o: \_\_\_\_\_ X \$10.00 = \_\_\_\_\_

Please make all checks payable to:  
WIRELESS ASSOCIATION OF SOUTH HILLS  
PLEASE MAIL RESERVATION TO:  
**WASHFEST 2016**  
c/o CAROL DANKO KB3GMN  
4246 Seton Drive  
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We reserve the right to resell any tables not occupied by 8 AM, unless prior arrangements have been made!





# WIRELESS ASSOCIATION OF SOUTH HILLS, INC.

## Membership Application, New or Renewal



I would like to join WASH! I am interested in the following type of membership: ☐ **New Membership** ☐ **Membership Renewal**

(check quarter \_\_\_\_\_ →)  
(check one )

☐ **1st Qtr**  
**Jan-Mar**

☐ **2nd Qtr**  
**Apr-Jun**

☐ **3rd Qtr**  
**Jul-Sept**

☐ **4th Qtr**  
**Oct-Dec**

☐ (F1) Full Membership:

\$20.00

\$15.00

\$10.00

\$5.00

☐ (F2) Full Membership < 18 or > 65 yrs of age:

\$10.00

\$7.50

\$5.00

\$2.50

☐ (A1) Associate Membership:

\$10.00

\$7.50

\$5.00

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☐ (FM1) Family Membership (\$3.00 x No. of household family members): \$ \_\_\_\_\_

Name(s): \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City, State: \_\_\_\_\_

Home Phone: \_\_\_\_\_

Email Address: \_\_\_\_\_

New Members Only:

☐ I do NOT want to be added to the Club E-Mail Reflector

☐ I do NOT want to be added to the Electronic Newsletter Mailing List

[If you have an Email address, you Will be added to both lists UNLESS you choose to Opt-Out]

Signature: \_\_\_\_\_

Call Sign: \_\_\_\_\_

License Class: \_\_\_\_\_

Expires On: \_\_\_\_\_

Work Phone: \_\_\_\_\_

Birthday: \_\_\_\_\_

ARRL Member? ☐ Yes ☐ No Family ARRL Member? ☐ Yes ☐ No

Date: \_\_\_\_\_

Amount Enclosed: \$ \_\_\_\_\_

**N3RDV has requested that all membership requests and renewals include an application so that his information is up to date**

Please make your check or money order payable to the club treasurer, Mark Stabryla.  
The Wireless Association of South Hills, Inc. reserves the right to accept or reject new memberships or renewals.  
Please return completed membership form along with check/money order to the club treasurer or mail to:

WIRELESS ASSOCIATION OF SOUTH HILLS, INC.  
c/o Mark Stabryla N3RDV, VP/Treasurer  
1120 McKnight Drive  
Bethel Park, PA 15102-2456



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Benefits for the club: A few more shekels for our coffers.

Just fill out the form below, include a check or money order made out to WASH/ARRL, and return all to the club treasurer or mail to:

WIRELESS ASSOCIATION OF SOUTH HILLS, INC.  
c/o Mark Stabryla N3RDV, VP/Treasurer  
1120 McKnight Drive  
Bethel Park, PA 15102-2456



Name: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, ZIP: \_\_\_\_\_

Please Check the Appropriate One-Year Rate:

☐ \$49 in US

☐ Age 21 or younger, \$20 in US (only if you are the oldest licensed amateur in your household)

☐ Canada \$49

☐ Elsewhere \$62

☐ Other (including Blind, Life, QST by First Class Postage — please contact ARRL for rate)

Dues subject to change without notice

Call Sign: \_\_\_\_\_

Date of Birth: \_\_\_\_\_

Total Enclosed: \$ \_\_\_\_\_

☐ Additional Family Members at the same address (\$8 per family member)

Name & Call Sign: \_\_\_\_\_

Name & Call Sign: \_\_\_\_\_

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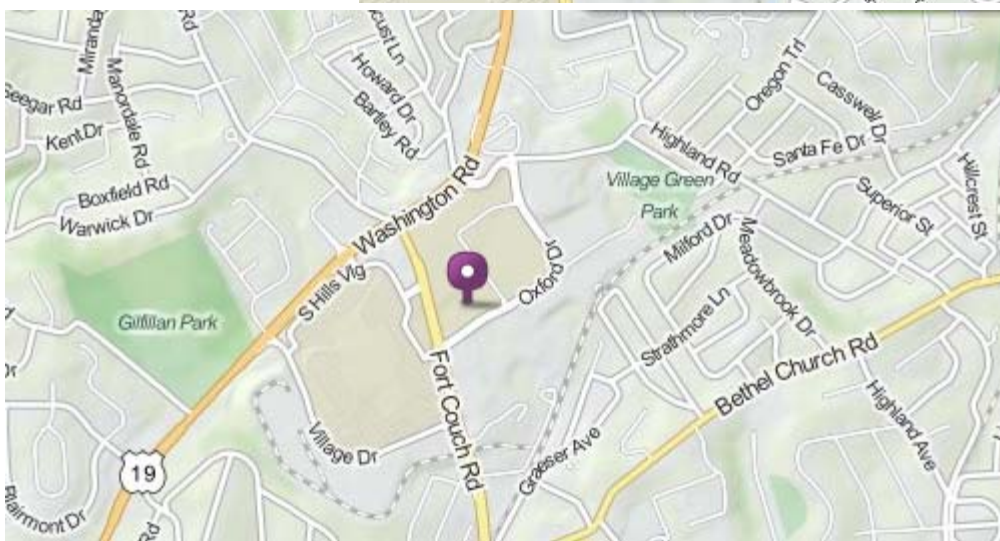
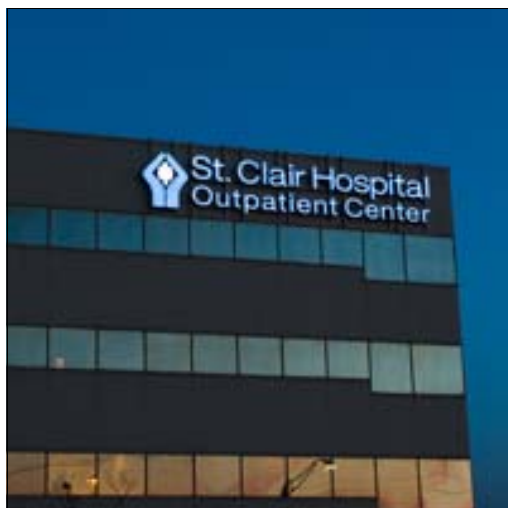
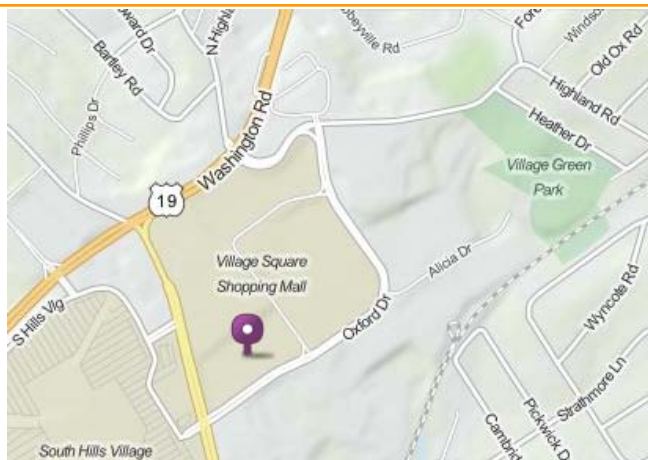
# 2016 WASH Meeting

## Location

### St. Clair Hospital Outpatient Center Conference Room

2000 Oxford Drive, Bethel Park PA 15102

Adjacent to Village Square Mall, across Ft. Couch Road from  
South Hills Village Mall, just off of US Route 19



## The WASHRag

Wireless Association of South Hills, Inc.

Ron Notarius W3WN, Editor

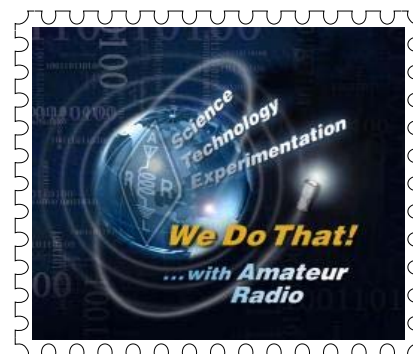
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WASHFest 2016,  
Aren't you?

