



WCARC NEWS

February 2006

www.wcarc.com

Williamson County Amateur Radio Club

PO Box 1644
Georgetown, TX 78627

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, Chairman
Tom Whiteside, N5TW
Bob Redoutey, N5KF

Emergency Coordinator
Jim Russell, NQ5L

January Meeting Minutes

The WCARC first meeting of 2006 was called to order by the new President, Paul Gilbert, KE5ZW. After introducing himself, visitors were acknowledged. These included Jim Phillips, KD5UBT, of the Liberty Hill area. George Walden, KG4LQX, from South Carolina visiting for the winter.

29 responded to the verbal roll call before the previous meeting's minutes were approved as posted in the January newsletter.

Treasurer's Report

Jon Boles, K5AEM, Treasurer, provided the financial report, which was approved by the members.

December, 2005

Beginning Balance:	\$2,209.27
Receipts/Deposits:	\$ 390.00
Expenditures:	\$ 78.74
Ending Balance:	\$2,520.53
ARES Funds Available:	(\$ 27.09)
WCARC Funds Available:	\$2,520.53

Paid Membership

	Beginning	Ending
Individual	88	93
Family	24	25
Honorary	3	3
Total	115	121
Total Persons		145

WCARES

Prior to calling on Jim Russell, NQ5L, for the ARES report, Paul KE5ZW recognized Tom Whiteside, N5TW, outgoing EC, for his leadership of the ARES group in the past 2 years.

ARES report - Jim Russell, NQ5L, EC Meeting announcement - Next meeting on January 12th at fire station #6 near the Dell Diamond. See additional info on page 3.

DX Report - John Warren, NT5C

Low sunspot activity has not resulted in lower noise, as would usually be expected. Contest season begins in mid-February.

DX-pedition to Antarctica will assume the call sign 3Y0PI in late January or early February.

Old Business

WCARC Swapfest - Rick Trommer, W5RHT
The 2006 WCARC Swapfest will be held February 12th at the Showbarn in Georgetown from 9 AM to 3 PM. The facility floor will be hardened and it will be possible to drive around inside. No tables are to be provided so sellers are expected to provide their own or use tail gates. Those expecting to need extension cords for their tables or tailgates should tell Rick W5RHT. Those who park near the posts will have easier access to power. Access to the event will be controlled. There will be door prizes and announcements made at the event. Rick will solicit help from volunteers soon. ARRL certified administrators are needed for testing that will be held in the kitchen area.

Longhorn District Boy Scout Camporee - Tom Whiteside, N5TW.

The Boy Scout Camporee will be held January 21st. WCARC will provide HF voice, local VHF, and WinLink at the event. Contact Tom N5TW by email to volunteer.

New Business

WCARES Negative Balance - Tom N5TW

After raising about \$3000 in past several years, the ARES group has bought equipment and software in support of its operations and now has a negative balance in its account (approximately -\$27). Since the WCARC sponsors the ARES group, Tom suggested a donation of "a couple of hundred dollars" to be made to WCARES. Dallas KD4HNX then suggested about \$500 be donated. Paul says that would leave about \$2020 going into the Hamfest, which Tom indicated as being acceptable. Tom then heard a "bid for \$300." After some discussion, Tom amended his suggestion to be \$300. Paul summarized by saying there had been suggestions for \$300 and \$500 and asked the club for its decision. A motion came from the floor to transfer \$300 from the

January Meeting Minutes continued...

club to ARES. The motion was seconded. Jon K5AEM then proposed forgiving the debt and also transferring the \$300. Everyone was satisfied with the modification and the motion was approved.

Paul Gilbert agreed to bring refreshments to the February meeting.

The Meeting was adjourned .

Evening Program

Tom Whiteside, N5TW - "dB per \$\$" An analysis of several antenna installations with an analysis on their performance versus cost.

Join Us For Breakfast

WCARC Breakfast - Saturdays at 6:45AM
Monument Café
1953 S. Austin Avenue
Georgetown Texas 78627

**WC-ARES NET... Sunday's
8 p.m. on 146.640, PL 162.2**

WCARC Meetings, 1st Thursday - 7:30 PM

Wesleyan Retirement Home
1105 S. Church St.
Georgetown, TX 78626

WCARC Repeater: 146.640 MHz, 162.2 PL

Website Of The Month North Texas Microwave Society

<http://www.ntms.org/>

Dedicated to Promoting Activity, the State of the Art in Equipment Design, and the Exchange of Ideas and Technology for the Amateur Bands Above 902 MHz

WCARES Meetings, 2nd Thursday - 7:00 PM

Round Rock Fire Station No. 6
2919 Joe DiMaggio Drive
Round Rock, TX 78664

SUITSAT-1 RSORS!! - Frank H. Bauer; KA3HDO

Amateur Radio on the International Space Station (ARISS) International Chairman AMSAT Vice President for Human Spaceflight Programs NASA Goddard Space Flight Center.

"This is SuitSat-1 RSORS!!"

These words will echo from space in the near future, inspiring students, exciting ham radio operators and touching the world.

If all goes as planned, a unique Extra-Vehicular Activity (EVA)—or Spacewalk will be conducted on the International Space Station (ISS) in early February 2006. During this spacewalk, the ISS crew will push a Russian spacesuit overboard---with no humans in it, of course!

But this Spacesuit holds the hopes, dreams and creativity of students around the world. And for a week or two, this Suit-robot-satellite will take on a life of its own---parroting students voices from around the world, voicing down suit health telemetry and sending a special commemorative picture to all who want to receive it. Suitsat-1 (also called Radioskaf or Radio Sputnik in Russian) mission activities will be conducted on the amateur radio (ham radio) frequencies, a bit above the FM broadcast band. The voice signals can be picked up with ham radio receivers and FM VHF (Very High Frequency) scanners—like police-band scanners.



Figure 1 - Russian Orlan Suit

Students, scouts, teachers, ham radio operators, and the general public are encouraged to track the space suit, hear the conversations from space, copy the suit telemetry and capture the picture. A special certificate will be distributed to those who receive the voice signals and those who capture the picture. We also will have a special award for those students who receive the "special words" that are embedded in the messages from our SuitSat student "crew members." These special words are in different languages---English, French, German, Spanish, Russian, and Japanese. So you are encouraged to record the SuitSat downlink audio and get help from fellow students who know these languages.

Also included in this spacesuit is a computer Compact Disk (CD) with images of over 300 items collected from schools and educational organizations around the world. These include creative works of art from students as well as student signatures, school or scout logos, and class or group pictures. Students, schools and educational

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**Newsletter Deadline for Articles and Submissions is
the 25th of the Month prior to publication**

ARES Report—Jim Russell, NQ5L

The start of this year saw a change in the Emergency Coordinator position for Williamson County. Jim Russell (NQ5L) took over from Tom Whiteside (N5TW). In effect, Tom and Jim swapped positions, with Tom taking over as the Digital AEC for the county. Tom also stepped into a new post as a District EC for Digital Communications for the South Texas Section. He will be championing additional deployment of Winlink and other digital technologies through out the Section.

Tom's leadership for the last two years has helped position us with a solid footing and a very active group. We all thank him for his time and dedication, and a job well done.

We started our year out with a great meeting to review our progress in 2005 and look forwards to an even better year in 2006. Among other tasks that we accomplished last year were:

- Improvements at the Cedar Park and Round Rock EOC's for packet email capability.
- Creation of a Telpac station at the Georgetown Health Care System.
- Exceeded our goal of 16 Packet Cavalry stations with a total of 33 operational stations by year end. WELL DONE!
- Deployed 6 HF Packet Cavalry stations (3 with advanced Pactor capability).
- Deployed 5 full time Telpac stations around the county with #6 on line this month.
- Integrated HF Pactor capability into our mix. This saw duty in Katrina & Rita support.
- Conducted a fall SET to stress our capability successfully. This was on top of real service in Caldwell County and in support of Katrina and Rita relief efforts. (Note that some other ARES groups passed on the SET due to the level of actual events late in the year – not us).

A quick survey was taken of the members present at the meeting to determine the interests of the members with several good suggestions for 2006. The AEC's will be meeting prior to the next monthly meeting to put the finishing touches on our program of action for this year. Some of the suggestions for 2006 goals include:

- More "hands on" activities in building infrastructure
- More involvement with our served agencies
- Improvements in EOC capability, particularly Williamson County and the City of Georgetown
- Additional training in voice procedures (equally important with digital)
- Continuing to improve our Winlink capabilities

If you have ideas for 2006, please forward them to NQ5L@ARRL.net.

Additional Leadership Positions: We have two AEC positions to fill. If you have an interest in being more involved in ARES, there is a spot for you. The two immediate needs are for a Training AEC to watch over the training needs of the group. The other position is for the Adjacent County AEC to maintain contact with, and coordinate our activities with, the other counties in our immediate area. Contact Jim Russell for more information on these two important positions.

Reminders: The monthly meeting is on February 9 at 7:00 PM. Our new meeting site is at Round Rock Fire Station 6 near the Dell Diamond. There is training event for helicopter landing training on February 11 at the Shoreline Christian Center.

Jim Russell
NQ5L

President's QRM

Greetings,

The Hamfest is coming up in less than a couple of weeks and Rick, N5NR has asked for volunteers to help staff the event.

I encourage all that can to offer their time and efforts to help run the talk-in, park attendees in the barn and other duties that Rick needs help with.

The hamfest is in a new location this year, so if you hear hams looking for directions, please help them out.

Please help out the program committee in finding programs for the meetings. If you have an interesting ham radio related program or know of someone that does, let the program committee know so that they may follow up on it.

All take care and see you at the Hamfest.

In Service,
Paul Gilbert, KE5ZW

In Other News...

WA7BNM Contest Calendar—February, 2006

Vermont QSO Party-0000Z, Feb 4 to 2400Z, Feb 5
YL-ISSB QSO Party-0000Z, Feb 4 to 2359Z, Feb 5
10-10 Int. Winter Contest, SSB-0001Z, Feb 4 to 2359Z, Feb 5
YLRL YL-OM Contest, CW-1400Z, Feb 4 to 0200Z, Feb 6
Minnesota QSO Party-1400Z-2400Z, Feb 4
AGCW Straight Key Party-1600Z-1900Z, Feb 4
Delaware QSO Party-1700Z, Feb 4 to 0500Z, Feb 5;
 1300Z, Feb 5 to 0100Z, Feb 6
Mexico RTTY International Contest-1800Z, Feb 4 to 1759Z, Feb 5
North American Sprint, SSB-0000Z-0400Z, Feb 5
ARCI Winter Fireside SSB Sprint-2000Z-2400Z, Feb 6
ARS Spartan Sprint-0200Z-0400Z, Feb 7
KCJ Topband Contest-1200Z, Feb 9 to 1200Z, Feb 10
CQ WW RTTY WPX Contest-0000Z, Feb 11 to 2400Z, Feb 12
New Hampshire QSO Party-0001Z, Feb 11 to 0001Z, Feb 13
SARL Field Day Contest-1000Z, Feb 11 to 1000Z, Feb 12
Asia-Pacific Spring Sprint, CW-1100Z-1300Z, Feb 11
Dutch PACC Contest-1200Z, Feb 11 to 1200Z, Feb 12
YLRL YL-OM Contest, SSB-1400Z, Feb 11 to 0200Z, Feb 13
Louisiana QSO Party-1500Z, Feb 11 to 0300Z, Feb 12
OMISS QSO Party-1500Z, Feb 11 to 1459Z, Feb 12
FISTS Winter Sprint-1700Z-2100Z, Feb 11
British Columbia QSO Challenge-1800Z, Feb 11 to 1800Z, Feb 12
RSGB 1st 1.8 MHz Contest, CW-2100Z, Feb 11 to 0100Z, Feb 12
North American Sprint, CW-0000Z-0400Z, Feb 12
ARRL School Club Roundup-1300Z, Feb 13 to 2400Z, Feb 17
AGCW Semi-Automatic Key Evening-1900Z-2030Z, Feb 15
ARRL Inter. DX Contest, CW-0000Z, Feb 18 to 2400Z, Feb 19
Run for the Bacon QRP Contest-0200Z-0400Z, Feb 20
Russian PSK WW Contest-2100Z, Feb 24 to 2100Z, Feb 25
CQ 160-Meter Contest, SSB-0000Z, Feb 25 to 2359Z, Feb 26
REF Contest, SSB-0600Z, Feb 25 to 1800Z, Feb 26
UBA DX Contest, CW-1300Z, Feb 25 to 1300Z, Feb 26
Mississippi QSO Party-1500Z, Feb 25 to 0300Z, Feb 26
CZEBRIS Contest-1600Z, Feb 25 to 2400Z, Feb 26
North American QSO Party, RTTY-1800Z, Feb 25 to 0600Z, Feb 26
High Speed Club CW Contest-0900Z-1100Z, Feb 26;
 1500Z-1700Z, Feb 26
North Carolina QSO Party-1700Z, Feb 26 to 0300Z, Feb 27
CQC Winter QSO Party-2200Z, Feb 26 to 0359Z, Feb 27

Contest Calendar compliments of WA7BNM @
<http://www.hornucopia.com/contestcal/contestcal.txt>

WILLIAMSON COUNTY AMATEUR RADIO CLUB

OWNED EQUIPMENT

Reviewed December 1, 2005

QTY—DESCRIPTION—LAST LOCATION—DATE

Tower Work

- 1 Gin Pole - KE5RS, John Benedict - 21-Nov-05
- 1 Tower Step - N5NMW, Jeff Schmidt - 22-Nov-05

Antenna measurement

- 1 MFJ Antenna Analyzer - N5KF, Bob Redoutey - 20-Nov-05
- 1 MFJ Grid Dip Adapter W5TA, Dick Foster -20-Nov-05

Antennas

- 1 Butternut HF Vertical 10M-80M - AF5Z, Bob Helms -1-Dec-05
- 1 Cushcraft 6-element 440MHz Beam - AF5Z, Bob Helms - 1-Dec-05
- 1 Cushcraft R7 HF Vertical - W5TA, Dick Foster - 20-Nov-05
- 1 Hygain triband antenna - W5TA, Dick Foster - 20-Nov-05
- 1 Mosley Triband Antenna (Donated by Harvey, N0AJP) - K5AEM, Jon Boles - 20-Nov-05

Masts

- 2 Push Up Masts - AF5Z, Bob Helms - 1-Dec-05
- 1 Push Up Masts - KC5RPF, Ken Larsen - 23-Nov-05
- 2 Push Up Masts - KD5KQV, Virgil Buell - 21-Nov-05

Power Supplies

- 1 20 Amp Power Supply - N5TW, Tom Whiteside - 20-Nov-05

Miscellaneous

- 2 Heavy Duty Power Cords - K5HTK, Jim Hester - 24-Nov-05

Pending sale

- 1 DB Commercial grade Antenna VHF high-band 158MHz - AF5Z, Bob Helms - 1-Dec-05

Tell us your story. Show off your ham shack. WCARC News welcomes articles and commentary from our members. Contact the editor if you want to publish an article or offer commentary on events related to amateur radio. Editorial assistance is absolutely free.

73 de na6m

SUITSAT-1 RSORS!! Continued...

organizations that participated in the development of this disk earlier this year will all be part of the SuitSat spacewalk---as their creative works, signatures and pictures all float in space!

The following will provide more details on the Suitsat-1 mission and provide you information on how you and your school can participate.

The Suit and On-Board Equipment

Through the miracle of ham radio, the ingenuity of the international space agencies, the help of students and schools, and the tireless work of a few volunteer "rocket scientists" Suitsat-1 was born.



Figure 2 - SuitSat Antenna and Interface Control Box

SuitSat is sponsored by ARISS (Amateur Radio on the International Space Station), an international working Corporation (AMSAT).

The idea for SuitSat was first conceived by the ARISS-Russia team, led by Sergey Samburov, RV3DR, and was extensively discussed at the joint AMSAT Symposium/ARISS International Partner meeting in October 2004. The project, is being led by project manager A. P. Alexandrov and Deputy Project Manager A. Poleshuk from RSC Energia, located in Korolev (Moscow area) Russia. The project was developed primarily by a joint US/Russian team. On the US side, the hardware project development was led by AMSAT member Lou McFadin, W5DID. Embedded in the Russian Orlon Space Suit (Figure 1) are two boxes housing the ham radio transmitter and the micro-controller and electronics that stores and plays back the digital voice and video recordings. Also inside the spacesuit will be some batteries to power the system and the "School Spacewalk" CD. On the outside of the spacesuit is the SuitSat antenna and the crew interface control box---the crew interface device that turns the SuitSat power on. See figures 2 to 3. Prior to the spacewalk, the ISS crew connects cables to the two internal boxes (the Kenwood transmitter box and the micro-controller electronics box), figure 4, and stores these two boxes in a fabric container that is housed inside the space suit (see figure 6). Next, they mount the antenna and the interface control box to the exterior of the suit helmet as shown in figure 2. Next, the batteries, interface control box and antennas are all connected to the two internal boxes with special connecting cables. The SuitSat is then ready for deployment. Once the crew is outside on their EVA, they turn all three switches

on the control box to the ON position and deploy the spacesuit from ISS. Their objective is to put Suitsat in a retrograde orbit so it "de-orbits" relative to ISS. This orbit will appear from the ground to be ahead of the ISS, while it is actually slowing down and is below ISS.

SuitSat-1 Transmission Specifics

All transmissions will be on 145.990 MHz FM. This is in the VHF (2 meter) portion of the amateur radio band. It can easily be picked up with a simple VHF hand-talkie ham radio, although ground-based antennas with higher gain are preferred to hear SuitSat for the entire 10 minute pass. SuitSat audio can also be received using a police band scanner. An external antenna is highly encouraged. SuitSat will be transmitting 0.5 watts into the same type of antenna currently used on the ISS ham radio station.

Additional Downlink Frequency and Information for Ham Radio Operators

Since SuitSat will be operating on the ISS world wide packet uplink frequency of 145.99 MHz, it is requested that all packet operations on that frequency be suspended for the duration of the SuitSat transmissions. Keeping transmissions off the downlink frequency will help to avoid local interference to the 1/2 watt downlink signal from SuitSat.

The ISS crossband repeater is under consideration for being temporarily reconfigured to listen for the SuitSat transmissions and then retransmit them on 437.80 MHz. It is hoped that persons with minimal equipment might have a better chance of hearing the SuitSat retransmissions from the crossband repeater since ISS has a power output of 10 watts. Please help us to avoid interference problems by not using the crossband repeater while SuitSat is active because anything else the repeater hears on 145.99 MHz will interfere with the SuitSat retransmissions.



Figure 3 - Crew Interface Control Box



Figure 4 - SuitSat Interface Control, Transmitter and Digitaltalker/Micro Controller

Tracking SuitSat-1

If you plan to hear SuitSat, you need to know when it will be visible in your area. To do this, you need to obtain some orbit prediction software or see the ISS orbital path from the internet. Information on this can be found at the following:

- <http://www.amsat.org>
- <http://www.amsat.org/amsat-new/tools/>
- <http://science.nasa.gov/Realtime/jtrack/>

SUITSAT-1 RSORS!! Continued...

Please understand that when you use an orbital prediction program you need an accurate synchronization of time (to a few seconds).

Downlink Specifics

To fully understand the Suitsat-1 downlinks, some background information is in order. One of the reasons our Russian colleagues were interested in developing SuitSat was as an on-orbit commemoration of the 175th anniversary of the Bauman Moscow State Technical University. This university is where many of the engineers in the Russian Space Agency graduated. As a result, the Russian-generated messages include congratulatory comments to the Bauman Moscow State Technical University. In addition to the messages from Russia, there are voice messages from students in Japan, Europe (Spanish and German), Canada (French) and the USA (English). The USA message is from a student enrolled in the Eastern Middle School, Silver Spring, Maryland. Eastern Middle School is a NASA Explorer School. In addition, the Suitsat-1 ID was voiced by a Korean-born young lady enrolled in Paint Branch High School, Burtonsville, Maryland, USA. As you can see, Suitsat-1 truly has an international flavor!

Special Word

Several of the student messages include a special word. One student project for SuitSat will be to copy all the special words (in different languages) and submit them to the ARISS team for special educational award recognition.



Figure 6 - SuitSat Hardware (Transmitter and Digitalker/Microcontroller Box inside Fabric Container)

Suit Telemetry

The suit telemetry is sensed by the SuitSat microcontroller and converted to a voice message. Three telemetry data messages will be transmitted. These will be periodically repeated. Specifically, the suit telemetry will be transmitted in the following order:

- Mission Time
- Suit Temperature
- Battery Voltage, where 28 Volts is the nominal voltage

The SuitSat team is quite interested all three pieces of telemetry as it will be a predictor for SuitSat mission life.

SuitSat Downlink Picture

The downlink picture will be transmitted using a set of audio tones, similar to a computer modem, using a ham radio picture standard called Slow-Scan Television (SSTV). SSTV, developed many years ago, provides Cell Phone quality pictures. A single picture was installed on in the SuitSat microprocessor memory and will be downlinked. SuitSat uses an SSTV data transmission standard called Robot 36. This standard sends the entire image in 36 seconds.

For more information on SSTV, you may check out:

- <http://www.marexmg.org/spacecam/spacecam.html>
- <http://www.ultimatecharger.com/SSTV.html>

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This Article compliments of AMSAT— <http://www.amsat.org/amsat-new/articles/BauerSuitsat/index.php>

For more information, please log on to <http://www.amsat.org>

SUITSAT-1 RSORS!! Continued...

SuitSat-1 Downlink Sequence

Now that you understand the specifics, what can you expect when SuitSat is over your area? To save SuitSat power and to maximize the time that SuitSat is operational, 30 second pauses have been included between each of the voice messages. So the sequence will be as follows:

1. SuitSat Voice ID (5 seconds)
 2. International voice message, Suit Voice
 3. Telemetry, or SSTV Image (15-45 seconds)
 4. 30 second pause
- ...and repeat

The international message order will be as follows:

1. Voice Telemetry
2. Russian Message
3. Europe Student Messages (Spanish and German)
4. Bauman Institute Message (Russian)
5. Canada Student Message (French)
6. Mr. Alexandrov Message (English)
7. Japan Student Message (Japanese)
8. USA Student Message (English)

SSTV Picture

Copying SuitSat Data

If you are planning on copying the SuitSat-1 downlink, you are highly encouraged to record it so you can replay it later. Tape recorders or digital voice recorders with at least 10-15 minutes of continuous recording are recommended. You can then use these to submit Suit telemetry information, the special words and the SSTV image to the ARISS team and the space agencies.

"School Spacewalk" CD

As part of the SuitSat project, a CD with hundreds of school pictures, artwork, poems, and student signatures is included. Two identical CDs were flown, one will go in the suit as part of the SuitSat-1 spacewalk. The other is available for the crew to review. There are approximately 300 items on the CD including artwork, school and educational organization logos, student signatures and student and school pictures. A composite of several of the items installed on the CD are shown in figure xx. As you can see, these are from all over the world (Japan/Asia, Europe, Russia, Canada, US, South America and Africa). Several NASA Explorer Schools participated as well as numerous ESA and Russian Space Agency-sponsored schools.

SuitSat postings of telemetry, special messages and the SSTV Image

This is still a work in progress. Please return to the web site often to get details on this as the SuitSat mission gets closer.

Special Certificates

Those that hear SuitSat will be eligible to receive a special certificate in commemoration of your achievement. Also, if you receive the SSTV image, copy the telemetry and/or copy the special words, special certificate endorsements will be provided. To receive a SuitSat special certificate, please use the standard QSL card address in your area of the world. These are located at: <http://www.rac.ca/ariss/oindex.htm#QSL's>

Indicate the time and date you heard SuitSat and any other information that will acknowledge your reception of the information (telemetry, SSTV picture, etc) that will confirm that you should receive the proper endorsements on your certificate. Please include a self addressed stamped envelope. And provide a big envelope and protective cardboard if you do not want your certificate folded or damaged during shipment.