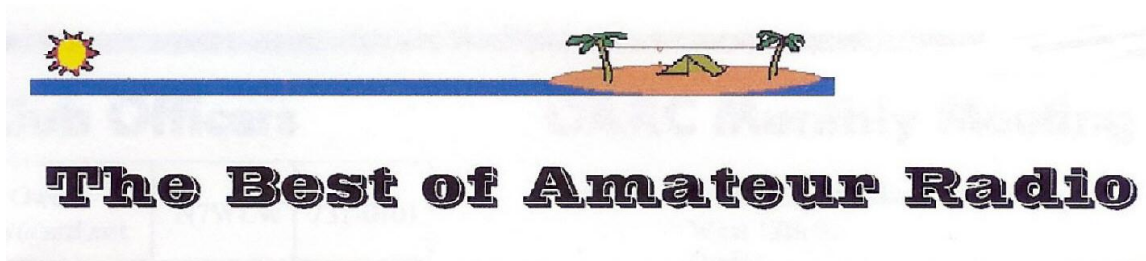# WATTS NEWS

The Best of Amateur Radio
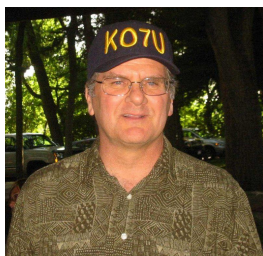
Welcome to the OARC e-Magazine

www.OgdenArc.org

JANUARY 2012

Next Club Meeting/Activity

3rd Saturday 21 January 2012

Topic: Secure Alert by Robert Laumer KC8FTV

Kim Owen KO7U
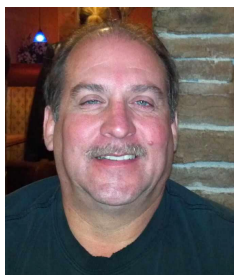President

Larry Griffin AD7GL
Vice President

Gary Hudman KB7FMS
Secretary

John Shupe K7DJO
Treasurer

Gil Leonard KF7KPL
Program Director

Dave Woodcock KF7PAV
Activity Director

Val Campbell K7HCP
Webmaster/NL Editor

PREVIOUS CLUB MEETINGS

3rd Saturday 17 December 2011
5:00PM

OARC Annual Family Dinner

This year the OARC annual December Family Dinner was held at:
Bella's Mexican Restaurant: 2700 N, I-15/I-84 exit # 349.

About 40 members, family and visitors attended this year. Fun was had by all.
The Grand Door Prize this years was a Baofeng Handy Talkie Transceiver and
an Arrow Dual Band J-Pole VHF/UHF antenna.

K7DJO Photo

K7DJO Photo

NEXT CLUB MEETING

When:	3rd Saturday 21 January 2012
Time:	9:00 AM
Location:	Riverdale Fire Station
Topic:	Secure Alert by Robert Laumer KC8FTV

Secure alert manufactures security monitoring equipment for law enforcement using various technologies.

JOIN OARC

Renew your membership now!

Membership in the Ogden Amateur Radio Club is open to anyone interested in Amateur Radio. You do not need an amateur license to join us. You do not need to join the club to participate with us. Dues are used to operate the club, field day activities, and repeater equipment maintenance.

Joining is easy. Come to a club meeting or fill out an application form from the club website. Instructions for mailing it are on the form.

DUES: Dues are $15.00 per person and runs September - August.
Additional family members are $8.00 each.

NOTE: New Hams >>> Membership in OARC is complimentary for remainder of 1st year licensed.

FROM KIM'S SHACK

Kim Owen KO7U – President

CQ ALL Members and Friends of OARC

Welcome 2012…It's going to be a great year!

I hope everyone had an enjoyable Christmas and New Year's

I want to thank those who helped make the Christmas dinner last month a success. A special thanks to Gil/KF7KPL and Dave/KF7PAV who made everything come together.

The year is under way. Val has made reservations for our steak fry in August. I have requested Special Event call sign W7G for the Golden Spike celebration. As a board we will be starting our Field-day preparation for the last full weekend June.

Club meeting will be at the Riverdale Fire Station on 21 January 2012 at 9:00 AM. Robert Laumer/KC8FTV will present about Secure alert manufactures security monitoring equipment for law enforcement using various technologies. This should be very interesting. See you there!

For now,
73 de Kim/KO7U

CLUB NEWS

NEW! NEW! NEW! Technician Licensing Class NEW! NEW! NEW!

Dates: Wednesdays - 04, 11, 18 and 25, January 2012 @ 6:00PM - 8:30PM

Location: Weber County Sheriff Office (Training room) 721 W 12th Street Ogden UT

VE Testing: Wednesday 01 February 2012 ...

If you have any questions please contact Larry Griffin AD7GL@arrl.net

Above is the announcement of the OARC Tech Licensing Class that is being held each Wednesday this January. The class is being conducted by Larry Griffin AD7GL. In addition Larry recruited an additional volunteer instructor for each of the four class sessions. Session 1: Stan Sjol W0KP; Session 2: Val Campbell K7HCP; Session 3: Gil Leonard KF7KPL; Session 4: Kim Owen KO7U. Two of the four sessions have already been held. Larry had 30+ potential Hams pre-register for the class this year. Below is a copy of the confirmation letter that Larry sent to each applicant.

The 2012 Ogden Amateur Radio Club Technician Licensing Class will begin at 6:00PM Wednesday, January 4 and will continue on January 11, 18 and 25. License testing will be held on Wednesday, February 1 at 5:00 PM. All sessions will be held at the Weber County Sheriff's Department training room. The address is 721 W. 12th St., Ogden, UT.

Prior to January 4, please review the material for the class. To access the course study guide, Google KB6NU, click on 2010 technician study guide and you will be able to down load the manual. We will be covering Pages 1 through 14 in our first session. Printed copies of the manual will be available at class for $11.00 (the fee returnable if manual is in good shape at course completion) for those that would like one.

We will cover the course material and we have reserved time for Q&A. at each session. We will ask that you study the material prior to each session. You will also need to take practice tests often and we will give you info on how to access those at the first session.

We are glad that you chose to join us on our adventure into Ham Radio. With a little work and study you will successful in obtaining your license. We are looking forward to having you join us.

Thank You.

K7DJO Photo

K7DJO Photo

Club Badges

OARC Club badges are still available for all club members and non-members.
The cost is $8.00 each. You can order the badge with either a "PIN" clip or a "MAGNETIC" clip.
Badge includes your Call Sign in large letters and your First Name in a somewhat smaller font in white lettering on a pitch black background. See example below.

Place your order along with $8.00 in advance for each badge ordered and specify Pin or Magnet style fastener, Call Sign and First Name.

Contact any club officer via email or see them at the next club meeting.
See web site www.ogdenarc.org "Club Officers" page.

Club Swapmeet

"SALE" or "WANTED" ITEMS NEEDED

OARC's O-bay (On-Line Swap-Meet) items needed for the web site...

Visit http://www.ogdenarc.org/ then click on **Obay-Swap.**

HOBBY NEWS

+ *Ham Radio in Hollywood*: Amateur Radio Makes Its Debut on *Last Man Standing*

If you watched the January 3 episode of *Last Man Standing* -- the ABC hit situation comedy starring Tim Allen as Mike Baxter, KA0XTT -- you were in for a treat. While this episode didn't feature Amateur Radio per se, it did show Mike's shack in the background. Viewers could see the DXCC, Worked All States, Worked All Continents and the Morse Code Proficiency Certificate -- all provided by the ARRL -- in the first scene. Later on in the show, Mike records his video blog. Sharp-eyed viewers spotted the *2011 ARRL Handbook* underneath the mini-tripod, next to issues of *QST*!

Make Baxter, KA0XTT -- played by Tim Allen -- records his video blog. Notice the tripod is on top of the 2011 *ARRL Handbook*, next to a stack of *QST*s. *Last Man Standing* airs on Tuesday nights at 8 PM (Eastern) on ABC. [Screengrab courtesy of ABC]

In the opening scene of the January 3 episode of *Last Man Standing*, viewers get their first glimpse of Mike's shack -- along with his impressive wall of ARRL awards and his QSL card collection. Mike's wife Vanessa (played by Nancy Travis) and his boss Ed (played by Hector Elizondo) also appear in the scene. [Screengrab courtesy of ABC]

The episode airing on January 17 will introduce Mike Baxter as KA0XTT. According to *Last Man Standing* Producer John Amodeo, NN6JA, Mike will have a QSO on the show. "We had two Amateur Extra class staff members complete a QSO on 10 meters and we recorded it," Amodeo explained. " Unfortunately, we were set up on a stage that is basically a Faraday cage. The very QRP signal made it radio-to-radio. We varied the RIT [receiver incremental tuning] to give it a little extra SSB sound, but I don't think the signal made it much past the stage walls. The recording will be on the show. We thought our ham viewers would get a kick out of it. Non-hams will think it's just distorted."

MORE HOBBY NEWS

Submitted by Mike Groves, KD7MG

High-Altitude Balloons

On December 11 2011 between 4 and 4:30 PM Pacific Time (00:00:00 – 00:30:00 UTC) , 4 high-altitude balloons were launched from the Blossom Hill area of San Jose by the California Near Space group.
(http://www.californianearspaceproject.com/) All of them contained a GPS receiver and a 1W APRS transmitter, set to beacon approx. every 2 minutes. The callsigns used were K6RPT-11, -12, -13, and -14. The -13 and -14 balloons were designed to go very high for a rather short flight. Before landing in western Nevada, both obtained heights of 125K feet, which is near record levels for a balloon.

The -11 and -12 balloons were designed to be "floaters" for longer distances. Balloon -12 made it to Indiana before descending into someone's back yard. The real surprise though has been -11. It completely cleared the continental US and drifted out over the Atlantic. At 100K feet, the maximum range of the transmitter is about 400-450 miles, which was about how far east of the US it was when it stopped being heard. That was the last anyone heard from it, until…   YES, it's now being picked up by APRS iGate stations in the Azores. As of this writing it's currently about 400 miles off the coast of Portugal doing 150 MPH at 110K feet. It's been air born over 50 hours, which is getting close to the estimated lifespan of the onboard battery for the APRS radio, and well beyond the estimated life of the latex balloon material. (UV rays are killer up that high!)

There is currently a big effort to alert European APRS receiving stations in its path to switch to 144.39 (from their normal APRS frequency of 144.80) to try and continue track it. Time will tell if it CAN continue to transmit AND if stations along the way can be reached to change frequencies.

Cheers,
Mike Groves, KD7MG

It looks like it went down fast at 0946 UTC.
http://aprs.fi/info/graphs/a/K6RPT-11

Roy
KE7PMY

Yes, indeed it went down in the wee hours of our morning. When the latex envelope is weakening, it expands, sending the balloon to a higher altitude before finally bursting. This was exactly what it did before plummeting into the Mediterranean Sea. Which, BTW, took about 30 minutes to free fall from that altitude!

Their goal was to have the first ham radio equipped balloon cross the continental US. Never did they expect it to ALSO cross the Atlantic! (As a side note, it crossed the Sierra Nevada mountain ranges in BOTH California and Spain!)

Some preliminary stats…

Distance: 6237 mi /10037 km (Previous record for ham radio equipped flight: 3361 mi)
Recorded flight time: 57 hours, 2 minutes

What a ride!
Mike, KD7MG

From The ARRL Letter for January 12, 2012

+ *FCC News*: Radio Amateurs Not Affected by Narrowbanding Requirements

The FCC released a *Public Notice* on January 6, reminding land mobile licensees, frequency coordinators and equipment manufacturers that they have less than one year to transition to narrowband operations in the 150-174 and 421-512 MHz bands. While the latter frequency range includes amateur service allocations, radio amateurs are not affected by the narrowbanding requirement. Land mobile operation is permitted in parts of the 421-430 MHz band in the areas around Detroit, Cleveland and Buffalo, and land mobile licensees in these areas are among those who will have to migrate to narrowband (12.5 kHz or narrower) technology by January 1, 2013. Amateur operation is not permitted along the Canadian border (north of Line A as defined in the FCC Rules) in the band 420-430 MHz.

This year a day and a second longer

by G4TUT - QST.com 2012-01-16

The International Earth Rotation and Reference Systems Service has decided that a positive leap **second** will be added to Coordinated Universal Time (UTC) at the end of June 2012.

While a leap second can be added and taken from any month, it has only occurred at the end of December and June. The most recent leap was added on December 31, 2008.

This will affect all time scales based on UTC, however the change to GPS will be automatic within the navigation message transmitted by satellites.

A leap second is necessary because of the Earth's unpredictable rotation.
UTC is based on atomic clocks, but has been kept more or less synchronised with mean solar time by way of leap seconds.

A revision of Standard-frequency and time-signal emissions will be voted by the International Telecommunication Union Radiocommunication Assembly meeting, immediately before the World Radiocommunication Conference 2012 (WRC-12), in Geneva this month.

A revision of Recommendation ITU-R TF.460-6 "Standard-frequency and time-signal emissions" will be voted on, and if approved, eliminates them by 2018. Highly accurate atomic clocks will be our sole method of time. Leap seconds introduced in 1972 would end.

Meantime with this being a so-called leap year, February will have a total of 29 days instead of the usual 28, to make up for our rotation around the Sun.

Jim Linton VK3PC

SUCH A HAM

EAT HAM

© Richard Parsons Productions Inc.   www.suchaham.com

Very funny.
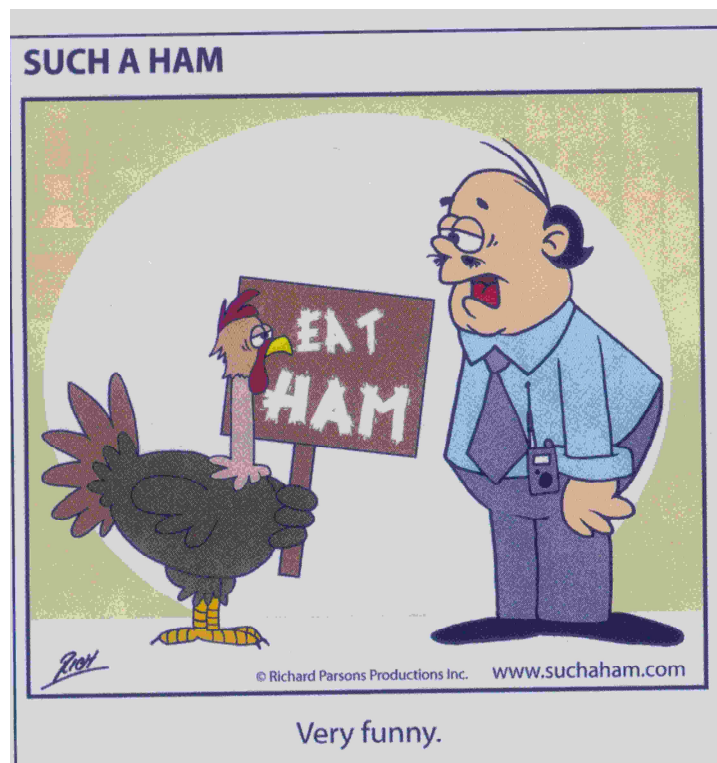
Dot-dash-diss: The gentleman hacker's 1903 lulz

27 December 2011 by **Paul Marks**

A century ago, one of the world's first hackers used Morse code insults to disrupt a public demo of Marconi's wireless telegraph

LATE one June afternoon in 1903 a hush fell across an expectant audience in the Royal Institution's celebrated lecture theatre in London. Before the crowd, the physicist John Ambrose Fleming was adjusting arcane apparatus as he prepared to demonstrate an emerging technological wonder: a long-range wireless communication system developed by his boss, the Italian radio pioneer Guglielmo Marconi. The aim was to showcase publicly for the first time that Morse code messages could be sent wirelessly over long distances. Around 300 miles away, Marconi was preparing to send a signal to London from a clifftop station in Poldhu, Cornwall, UK.

Yet before the demonstration could begin, the apparatus in the lecture theatre began to tap out a message. At first, it spelled out just one word repeated over and over. Then it changed into a facetious poem accusing Marconi of "diddling the public". Their demonstration had been hacked - and this was more than 100 years before the mischief playing out on the internet today. Who was the Royal Institution hacker? How did the cheeky messages get there? And why?

It had all started in 1887 when Heinrich Hertz proved the existence of the electromagnetic waves predicted by James Clerk Maxwell in 1865. Discharging a capacitor into two separated electrodes, Hertz ionised the air in the gap between them, creating a spark. Miraculously, another spark zipped between two electrodes a few metres away: an electromagnetic wave from the first spark had induced a current between the second electrode pair. It meant long and short bursts of energy - "Hertzian waves" - could be broadcast to represent the dots and dashes of Morse code. Wireless telegraphy was born, and Marconi and his company were at the vanguard. Marconi claimed that his wireless messages could be sent privately over great distances. "I can tune my instruments so that no other instrument that is not similarly tuned can tap my messages," Marconi boasted to London's *St James Gazette* in February 1903.

That things would not go smoothly for Marconi and Fleming at the Royal Institution that day in June was soon apparent. Minutes before Fleming was due to receive Marconi's Morse messages from Cornwall, the hush was broken by a rhythmic ticking noise sputtering from the theatre's brass projection lantern, used to display the lecturer's slides. To the untrained ear, it sounded like a projector on the blink. But Arthur Blok, Fleming's assistant, quickly recognised the tippity-tap of a human hand keying a message in Morse. Someone, Blok reasoned, was beaming powerful wireless pulses into the theatre and they were strong enough to interfere with the projector's electric arc discharge lamp.

Mentally decoding the missive, Blok realised it was spelling one facetious word, over and over: "Rats". A glance at the output of the nearby Morse printer confirmed this. The incoming Morse then got more personal, mocking Marconi: "There was a young fellow of Italy, who diddled the public quite prettily," it trilled. Further rude epithets - apposite lines from Shakespeare - followed.

The stream of invective ceased moments before Marconi's signals from Poldhu arrived. The demo continued, but the damage was done: if somebody could intrude on the wireless frequency in such a way, it was clearly nowhere near as secure as Marconi claimed. And it was likely that they could eavesdrop on supposedly private messages too.

Marconi would have been peeved, to say the least, but he did not respond directly to the insults in public. He had no truck with sceptics and naysayers: "I will not demonstrate to any man who throws doubt upon the system," he said at the time. Fleming, however, fired off a fuming letter to *The Times* of London. He dubbed the hack "scientific hooliganism", and "an outrage against the traditions of the Royal Institution". He asked the newspaper's readers to help him find the culprit.

He didn't have to wait long. Four days later a gleeful letter confessing to the hack was printed by *The Times*. The writer justified his actions on the grounds of the security holes it revealed for the public good. Its author was Nevil Maskelyne, a mustachioed 39-year-old British music hall magician. Maskelyne came from an inventive family - his father came up with the coin-activated "spend-a-penny" locks in pay toilets. Maskelyne, however, was more interested in wireless technology, so taught himself the principles. He would use Morse code in "mind-reading" magic tricks to secretly communicate with a stooge. He worked out how to use a spark-gap transmitter to remotely ignite gunpowder. And in 1900, Maskelyne sent wireless messages between a

ground station and a balloon 10 miles away. But, as author Sungook Hong relates in the book *Wireless*, his ambitions were frustrated by Marconi's broad patents, leaving him embittered towards the Italian. Maskelyne would soon find a way to vent his spleen.

One of the big losers from Marconi's technology looked likely to be the wired telegraphy industry. Telegraphy companies owned expensive land and sea cable networks, and operated flotillas of ships with expert crews to lay and service their submarine cables. Marconi presented a wireless threat to their wired hegemony, and they were in no mood to roll over.

The Eastern Telegraph Company ran the communications hub of the British Empire from the seaside hamlet of Porthcurno, west Cornwall, where its submarine cables led to Indonesia, India, Africa, South America and Australia. Following Marconi's feat of transatlantic wireless messaging on 12 December 1901, ETC hired Maskelyne to undertake extended spying operations.

Maskelyne built a 50-metre radio mast (the remnants of which still exist) on the cliffs west of Porthcurno to see if he could eavesdrop on messages the Marconi Company was beaming to vessels as part of its highly successful ship-to-shore messaging business. Writing in the journal *The Electrician* on 7 November 1902, Maskelyne gleefully revealed the lack of security. "I received Marconi messages with a 25-foot collecting circuit [aerial] raised on a scaffold pole. When eventually the mast was erected the problem was not interception but how to deal with the enormous excess of energy."

It wasn't supposed to be this easy. Marconi had patented a technology for tuning a wireless transmitter to broadcast on a precise wavelength. This tuning, Marconi claimed, meant confidential channels could be set up. Anyone who tunes in to a radio station will know that's not true, but it wasn't nearly so obvious back then. Maskelyne showed that by using an untuned broadband receiver he could listen in.

Having established interception was possible, Maskelyne wanted to draw more attention to the technology's flaws, as well as showing interference could happen. So he staged his Royal Institution hack by setting up a simple transmitter and Morse key at his father's nearby West End music hall.

The facetious messages he sent could easily have been jumbled with those Marconi himself sent from Cornwall, ruining both had they arrived simultaneously. Instead, they drew attention to a legitimate flaw in the technology - and the only damage done was to the egos of Marconi and Fleming.

Fleming continued to bluster for weeks in the newspapers about Maskelyne's assault being an insult to science. Maskelyne countered that Fleming should focus on the facts. "I would remind Professor Fleming that abuse is no argument," he replied.

In the present day, many hackers end up highlighting flawed technologies and security lapses just like Maskelyne. A little mischief has always had its virtues.

Paul Marks *is senior technology correspondent for New Scientist*

ANNOUNCEMENTS

Next Club Meeting:
3rd Saturday 17 December 2011

- The Ogden Amateur Radio Club meetings are usually held on the **3rd** **Saturday** of each month.

- **Time:9:00 AM**

- **Location: Riverdale Fire Station**

- **Topic: Secure Alert by Robert Laumer KC8FTV**

- **Talk-in: -146.90 (pl 123.0)**

Check OARC web site for details
www.ogdenarc.org

- Please invite a friend to join you. You do not have to be a member of the club to participate in our club meetings or activities. We invite all to join us.

- If anyone is interested in doing a presentation on something or just have something unique to show at the meetings. - Please get a hold of any of the officers and let us know.

Next Weber Co VE Test Session:
1st Wednesday 01 February 2012

- Exam sessions are held in Ogden every few months, *usually* the first Wednesday in February, June, and October.

Time: 05:00 PM *Walk-ins allowed*

Location:

Weber County Sheriff Office
(Training room)
721 W 12th Street Ogden UT

Contact: VE Liaison:

Mary Hazard
w7ue@arrl.net (801-430-0306)

Rick Morrison
morrisonri@msn.com
(801-791-9364)

Cost: $ 14.00

Two forms of **ID**, one of which must be a **picture ID**.
For "Upgrades" bring current **license** and a **copy** of current license, and any **CSCE**'s

Most **calculators** allowed. Calculator memories must be cleared before use.

Club Web Site

Be sure to visit our club web site.

- **www.OgdenARC.org**

Club membership is open to anyone interested in Amateur Radio. You do not need an amateur license to join us. Dues are used to operate the club, field day activities, and repeater equipment maintenance.

You do not need to join the club to participate with us.

Club Call Sign

Listen to the club repeaters for this very familiar CW ID. You do know Morse Code don't you?

- **W7SU**

ARRL Field Day is held on the last full weekend of June every year.
Location may vary each year so watch this notice for details as time draws near.
See you there.

OARC REPEATERS			
FREQ	**CLUB**	**TONE**	**LOCATION**
146.820-	**OARC**	**123.0**	**Mt Ogden**
448.600-	**OARC**	**123.0**	**Mt Ogden**
146.900-	**OARC "Talk-in"**	**123.0**	**Little Mtn (w/auto patch)**
448.575-	**OARC**	**100.0**	**Little Mtn (w/auto patch)**

OTHER AREA REPEATERS			
FREQ	**CLUB**	**TONE**	**LOCATION**
146.620-	UARC	none	Farnsworth Pk
147.120+	UARC	100.0	Farnsworth Pk
449.100-	UARC	146.2	Farnsworth Pk
449.500-	UARC	100.0	Farnsworth Pk
ATV	UARC	Ch-58	Farnsworth Pk
147.040+	DCARC	123.0	Antelope Isl
447.200-	DCARC	127.3	Antelope Isl
449.925-	DCARC	100.0	No Salt Lake
145.290-	UBET	123.0	Brigham City
145.430-	UBET	123.0	Thiokol
448.300-	UBET	123.0	Thiokol
146.640-	BARC	none	Logan
146.720-	BARC	103.5	Mt Logan
147.260+	BARC	103.5	Promontory Pt
449.625-	BARC	103.5	Mt Logan
145.250-	WSU	123.0	* coming soon
449.250-	WSU	123.0	* coming soon
145.490-	K7HEN	123.0	Promontory Pt
146.920-	N7TOP	123.0	Promontory Pt
449.775-	N7TOP	123.0	Promontory Pt
448.825-	IRLP/Echo	123.0	Clearfield City
449.950-	IRLP	123.0	Clearfield City
449.425-	IRLP	100.0	Nelson Peak
147.360+	Summit County	100.0	Lewis Peak

AREA CLUB MEETINGS & WEB SITES			
CLUB	WEB SITE	DATE/TIME	LOCATION
Ogden ARC	ogdenarc.org	3rd Saturday 09:00 am	Check OARC web site …
WC ARES	ogdenarc.org/ join.html#ares	2nd Thursday 06:30 pm	Weber Co. Library Ogden Utah
WC Sheriff Comm-O		1st Saturday 10:00 am	Weber Co. Sheriff Complex West 12th Street Ogden Utah
Barc	barconline.org	2nd Saturday 10:00 am	Cache Co. Sheriffs Complex 200 North 1400 West Logan Ut
CSERG	dcarc.net /ares.htm/	Last Wednesday 8:30pm	Clearfield City Hall Clearfield Utah
Dcarc	dcarc.net	2nd Saturday 10:00 am	Davis Co. Sheriff Complex Farmington Utah
NU Ares	home.comcast. net/~noutares/	3rd Wednesday 7:00 pm	Cache Co. Sheriff Office Logan Utah
Uarc	xmission.com /~uarc/	1st Thursday 7:30 pm	UofU EMC Bldg Room 101 Salt Lake City Utah
Ubet	27meg.com /~k7ub/	4th Thursday 6:30 pm	BE-Thiokol: 24 East 100 South Brigham City Utah
Utah DX Association	udxa.org	3rd Wednesday check web page for details	check web page for details Salt Lake City area
UvhfS	ussc.com /~uvhfs/	Each Tuesday 8:00 pm (refer to web site)	Weekly 2 meter net (no eye ball meetings)
WD Arc	westdesertarc. org/	1st Tuesday 7:00 pm	Tooele County Courthouse Tooele Utah
WsuArc	arcweber.edu	3rd Thursday 5:30 pm	WSU Blding #4 Room ? Ogden Utah

LOCAL AREA NETS		
DATE	CLUB	FREQ
Daily @ 12:30 PM mt	Utah Beehive net HF	7.272 Mhz HF LSB
Daily @ 07:30 PM mt	Utah Code net HF	3.570 Mhz HF CW
Daily @ 02:00 UTC	Utah Farm net HF	3.937 Mhz HF LSB
Sunday @ 8:45 AM	Ogden Old Timers HF net	7.193 Mhz HF LSB
Sunday @ 7:30 PM	UBET ARC	145.430 - 123.0 (training net)
Sunday @ 8:30 PM	SATERN Net	145.900 - 123.0
Sunday @ 9:00 PM	Morgan Co Net	147.060 = simplex
Sunday @ 9:00 PM	UARC Info net	146.620- no PL tone required
Monday @ 9:00 PM	2-meter SSB net	144.250 Mhz 2-meter USB
Tuesday @ 8:00 PM	Weber ARES	448.600 - 123.0
Tuesday @ 8:00 PM	VHF Society Swap	147.120 + 100.0
Tuesday @ 9:00 PM	Bridgerland ARC	147.260 + 103.5
Wednesday @ 8:00 PM	UBET ARC	145.290-, 145.430-, 448.300- (all 123.0)
Wednesday @ 8:30 PM	CSERG	145.770 simplex
Wednesday @ 9:00 PM	No. Utah 10m HF net	28.313 Mhz HF USB
Wednesday @ 9:00 PM	6-meter SSB net	50.125 Mhz 6-meter USB
Thursday @ 6:30 PM	Davis Co Elmers Net	147.040 + 123.0 New Hams
Thursday @ 8:00 PM	Weber State ARC	146.820 - 123.0 (coming soon)
Thursday @ 8:00PM	State RACES VHF/IRLP	145.490 - 123.0, 146.680 - 123.0 3rd Thursday - even months only
Thursday @ 8:30 PM	Davis ARES	147.420 = simplex
Thursday @ 9:00PM	Wasatch Back Net	147.360 + 100.0
Saturday @ 8:00AM mst	RACES State HF	3.920 Mhz HF LSB 3rd Saturday – odd months only
Saturday @ 11:00AM mst	QCWA net HF	7.272 Mhz HF LSB

73 es cul de W7SU

www.OgdenArc.org