

Welcome



What We Are Covering Tonight

- DXing, Awards and Contesting
- Satellites
- Digital Techniques
- APRS
- Special Modes

DXing, Awards & Contesting

DXing

- **DX** stands for *distant station*.
- Distance is a relative thing.
 - DX on HF means thousands of miles
 - On VHF/UHF, DX means any contact beyond the radio horizon
- On VHF/UHF, the use of *grid squares* are commonly used to help shorten up contact length.
- Pursuing DX hones a ham's technical and operating skills, learning about propagation, antennas and the natural environment.

Awards

- DXCC
 - Contacting 100 different countries and/or entities
- WAS
 - Contacting 50 states
- VUCC
 - Contacting 100 grid squares on VHF/UHF
- 1000-Mile-Per-Watt Award

Contesting

- Radio contests focus on trying to make as many contacts as possible in a fixed amount of time. T7A07
- Field Day
- Sweep Stakes
- QSO Parties
- CQ DX Contest

- ARRL Contest Corral

Foxhunting

- **Foxhunting** is a popular type of contest where you try to find a hidden transmitter (the *fox*).
- Not much equipment needed; a portable radio with a signal strength meter and a portable or handheld directional antenna, such a small Yagi beam. T7A06
- A practical side to foxhunting is that it trains hams to find downed aircraft, lost hikers and sources of interference. T7A05

Special Event Stations

- A Special Event station is a temporary station that operates in conjunction with an activity of special significance. T7A10
- Usually these stations are demonstration stations set up for public display.
- Commemorative certificates are usually awarded for contacting these stations.
- We operated for the city of Owatonna's 150th celebration.

Satellites

Satellites

- **OSCAR** – Orbiting Satellite Carrying Amateur Radio.
- A satellite far enough above the earth can relay signals between different countries. T7B03
- Satellite contacts can be made by any amateur licensed to transmit on the uplink frequency. T7B01
- Satellite uplink and downlink frequencies are restricted to segments of frequencies (called satellite sub-bands; see Table 4-6, page 4-31) set aside for earth-space communications. T7B09
- The satellite sub-band for 70 cm is 435 to 438 MHz. T7B10

Satellites, cont.

- A **satellite beacon** is a signal broadcast continuously that contains information about the satellite. T7B05
- **Doppler shift** is a shift in a signals frequency due to the relative motion between the transmitter and receiver. T7B07
- **LEO** – A satellite in Low Earth Orbit T7B11
- A **satellite tracking program** is used to determine when a satellite will be in view. T7B06

Satellites, cont.

- Always use the **minimum amount of power** to contact satellites. T7B02
- **AMSAT** is the organization that coordinates the building and launch of most amateur satellites. T7B08
- Any amateur licensed to use the 2 – meter band (Technician or higher class) can contact the International Space Station. T7B04

Digital Techniques

Digital Modes

- Originally limited to radioteletype (RTTY).
- With the advent of personal computers and sound cards, many more digital modes/methods became available.
 - AMTOR, PACTOR
 - PSK31, MFSK
 - Packet T6C01
- Digital modes have the ability to automatically correct errors caused by noise and interference. T5D13

Packet and Packet Networks

- On VHF and UHF, packet radio is the most common digital mode.
- Packets are transmitted in bursts that sounds like noise to the ear.
- A Terminal Node Controller is used to send and receive the packets (goes between the radio and computer).
- Can connect directly or through a digipeater to increase the range.

Keyboard-to-Keyboard

- Designed for live person-to-person communications.
- RTTY is the oldest method.
- Several "TOR" (Teletype Over Radio) modes on HF, AMTOR, GTOR, PACTOR.
- PSK31 is the most popular keyboard-to-keyboard mode.
- **PSK** stands for ***Phase Shift Keying***. T6C06
- Although not very fast, PSK31 works very well in noisy conditions when other modes stop working. T6C07

APRS

APRS

- **APRS** stands for ***Automatic Position Reporting System***. T6C02
- Uses packet radio to transmit the position information from a moving or portable station to a system of APRS digipeaters. The information is forwarded onto servers connected to the Internet. Websites can then access the data and display the position of the station on maps in various ways.
- The portable station is basically a packet radio station that has a GPS connected to it. T6C03

APRS Map



Special Modes

Video

- Slow Scan TV (SSTV)
 - Sending snap-shot pictures
- Amateur TV (ATV)
 - Similar to commercial TV imagery



- **ATV** is on 430 MHz and higher because of the signals **6 MHz bandwidth**. **T6A11**
- The ATV NTSC fast-scan color TV signal is the same as a standard commercial broadcast TV signal. **T6C04**

Other Special Modes

- Meteor Scatter
 - Reflecting radio signals off of the ionized trail left by meteors
- Moonbounce
 - Reflecting radio signals off the surface of the moon

RC Control



- Special amateur frequencies on the 50 MHz band are set aside for radio control activities.
- Amateurs **may transmit telecommand signals** with output power of **up to 1 watt**. **T7A11**
- RC modelers are **required to display their call sign and address on the RC transmitter**. **T7A12**

Next Time

- Control Operators
- Identification
- Third Part Communications
- Remote and Automatic Operations
- Prohibited Transmissions
- Electrical Safety
- RF Exposure
- Read Sections 6.1 thru 6.6, 7.1, 7.2