THE CODE OF THE WEST

UNIVERSITY AMATEUR RADIO CLUB N7UW

Department 3625
1000 East University Avenue
LARAMIE, WYOMING 82071

May 2004

http://picasso.uwyo.edu/uarc

****

PRESIDENT:	John M. Harrison	KD7NAE	johnmh@uwyo.edu
VP/SECRETARY:	Doris L. Hutcheson	KD7RQX	dhutch@uwyo.edu
TREASURER:	William H. Frazier	N7SXC	w.h.frazier@juno.com
COTW EDITOR:	John M. Harrison	KD7NAE	johnmh@uwyo.edu
UW ADVISOR:	Jerry Tastad	N7JT	jtastad@uwyo.edu

****

UARC MEETING

The regular monthly meeting of the University Amateur Radio Club will be held Tuesday 4 May 2004 in room 2100 of the Engineering Building at 7:30 pm local time on the University of Wyoming campus. Talk in on the UARC repeater at 146.610 MHz 600 kHz standard negative offset.

****

MESSAGE FROM THE PRESIDENT / COTW EDITOR John KD7NAE

Congratulations to those who successfully passed their license exams Saturday 26 April 2004. We have two new Technician licensees and one upgrade to Extra Class. Thanks to Jerry N7JT for organizing the exam session along with our other VE examiners.

There is a lot on the agenda for next week's UARC meeting, so hope many of you can attend. Field Day planning and support for the Dead Dog Classic bicycle race will be discussed. Bill AF7E will present his plan for bike race communications. Field Day activities at Fox Park were discussed at last month's meeting. Tentative plans are included in the minutes. We will want to substantially complete our planning at Tuesday's meeting for Field Day and bike race support taking place Saturday 26 June 2004. We also need to continue planning and getting volunteers to support the Laramie Enduro mountain bike race scheduled for Sunday 1 August 2004 around the Happy Jack area north of I-80. I've been attending the planning meetings for this event and will provide more information as it is available.

Memorial day weekend is the Wyoming State ARRL Convention in Casper. Registration form and details were reprinted in the last COTW and will be available at our Tuesday meeting. Licensing examinations, swap tables, vendor booths, technical programs and a Saturday evening banquet are featured activities along with the opportunity to socialize with our Wyoming ham friends in person.

I've got an APRS tracker working using a TinyTrak3 from Byonics.com. See some pictures and description of this rig in this issue. Dave KY7DR has provided some pictures of his portable tracker setup and an APRS article for this issue as well. Thanks to Dave KY7DR and Tony KD7TA for teaching us about APRS and to Tony for providing the APRS digital repeater located in the Wyoming Union tower along with the 146.610 repeater and club station.

Good news was received from Mike Winters of the local office of the US Forest Service. Our fee waiver application for the 146.820 repeater site on Beacon Hill was approved and a copy is in hand for the club records. We also received forms from the state for renewal of our tax exempt non-profit organization status.

Cheers and 73s. John KD7NAE

****

UARC CALENDAR

29-30 May 2004 Wyoming State ARRL Convention in Casper, WY
http://www.wyohamfest.com contact Rev Morton WS7W ws7w@arrl.org
307-235-2799 1341 Trojan Drive Casper, WY 82609

31 May – 13 Jun 2004 Sainte Marie du Mont, France: Reseau des Emetteurs Francais, TM6JUN. 60th anniversary of Allied disembarkment at Utah Beach. SSB and CW 80, 40, 20, 17, 15, 12 and 10 meter bands. QSL. Denis Villemion, F5RJM, Le Flaquet, 50470 Tollevast, France.

26 June 2004 Field Day and Dead Dog Classic Bicycle Race Fox Park field site and Albany to summit on highway 230 race route

1 August 2004 Laramie Enduro Mountain Bicycle Race Happy Jack area Hams needed

Upcoming ARRL contests include:

12-14 June 2004	ARRL June VHF QSO Party
19 June 2004	Kid's Day
26-27 June 2004	ARRL Field Day
10-11 July 2004	IARU HF World Championships
7-8 Aug 2004	ARRL UHF Contest
21-22 Aug 2004	ARRL 10 GHz and Up Contest
11-12 Sept 2004	ARRL September VHF QSO Party
18-19 Sept 2004	ARRL 10 GHz and Up Contest
6-8 Nov 2004	ARRL November Sweepstakes (CW)
20-22 Nov 2004	ARRL November Sweepstakes (Phone)

see http://www.arrl.org/contests/calendar.html for more info

Introduction to the Automated Position Reporting System (APRS)

Introduction to APRS, from chapter 1 of the APRS protocol reference version 1.0.1, found at ftp://ftp.tapr.org/aprssig/aprsspec/spec/aprs101/APRS101.pdf Compiled by Dave KY7DR

What is APRS?

APRS is short for Automatic Position Reporting System, which was designed by Bob Bruninga, WB4APR, and introduced by him at the 1992 TAPR/ARRL Digital Communications Conference. Fundamentally, APRS is a packet communications protocol for disseminating live data to everyone on a network in real time. Its most visual feature is the combination of packet radio with the Global Positioning System (GPS) satellite network, enabling radio amateurs to automatically display the positions of radio stations and other objects on maps on a PC. Other features no directly related to position reporting are supported, such as weather station reporting, direction finding, and messaging.

APRS is different from regular packet in several ways:

- It provides maps and other data displays, for vehicle/personnel location and weather reporting in real time.
- It performs all communications using a one-to-many protocol, so that everyone is updated immediately.
- It uses generic digipeating, with well-known callsign aliases, so that prior knowledge of network topology is not required.
- It supports intelligent digipeating, with callsign substitution to reduce network flooding.
- Using AX.25 UI-frames, it supports two-way messaging and distribution of bulletins and announcements, leading to fast dissemination of text information.
- It supports communications with the Kenwood TH-D7 and TM-D700 radios, which have built-in TNC and APRS firmware.

Conventional packet radio is really only useful for passing bulk message traffic from point to point, and has traditionally been difficult to apply to real-time events where information has a very short lifetime. APRS turns packet radio into a real-time tactical communications and display system for emergencies and public service applications.

APRS provides universal connectivity to all stations, but avoids the complexity, time delays, and limitations of a connected network. It permits any number of stations to exchange data just like voice users would on a voice net. Any station that has information to contribute simply sends it, and all stations receive it and log it.

APRS recognizes that one of the greatest real-time needs at any special event or emergency is the tracking of key assets. Where is the marathon leader? Where are the emergency vehicles? What's the weather at various points in the county? Where are the power lines down? Where is the head of the parade? Where is the mobile ATV camera? Where is the storm?

To address these questions, APRS provides a fully features automatic vehicle location and status reporting system. It can be used over any two-way radio system including amateur radio, marine band, and cellular phone. There is even an international live APRS tracking network on the Internet.

(end of excerpt from the APRS protocol reference).

APRS Notes by Dave KY7DR

In practice, there are three key components of an APRS network: (1) trackers capable of transmitting their location, (2) computers with APRS software capable of displaying locations on a "live map", and (3) one or more digipeaters.

Traditionally, a "tracker" was a laptop computer with a GPS receiver plugged into one serial port and a TNC with radio plugged into another serial port. Software on the PC would encode position information from the GPS and transmit it via the TNC and radio.

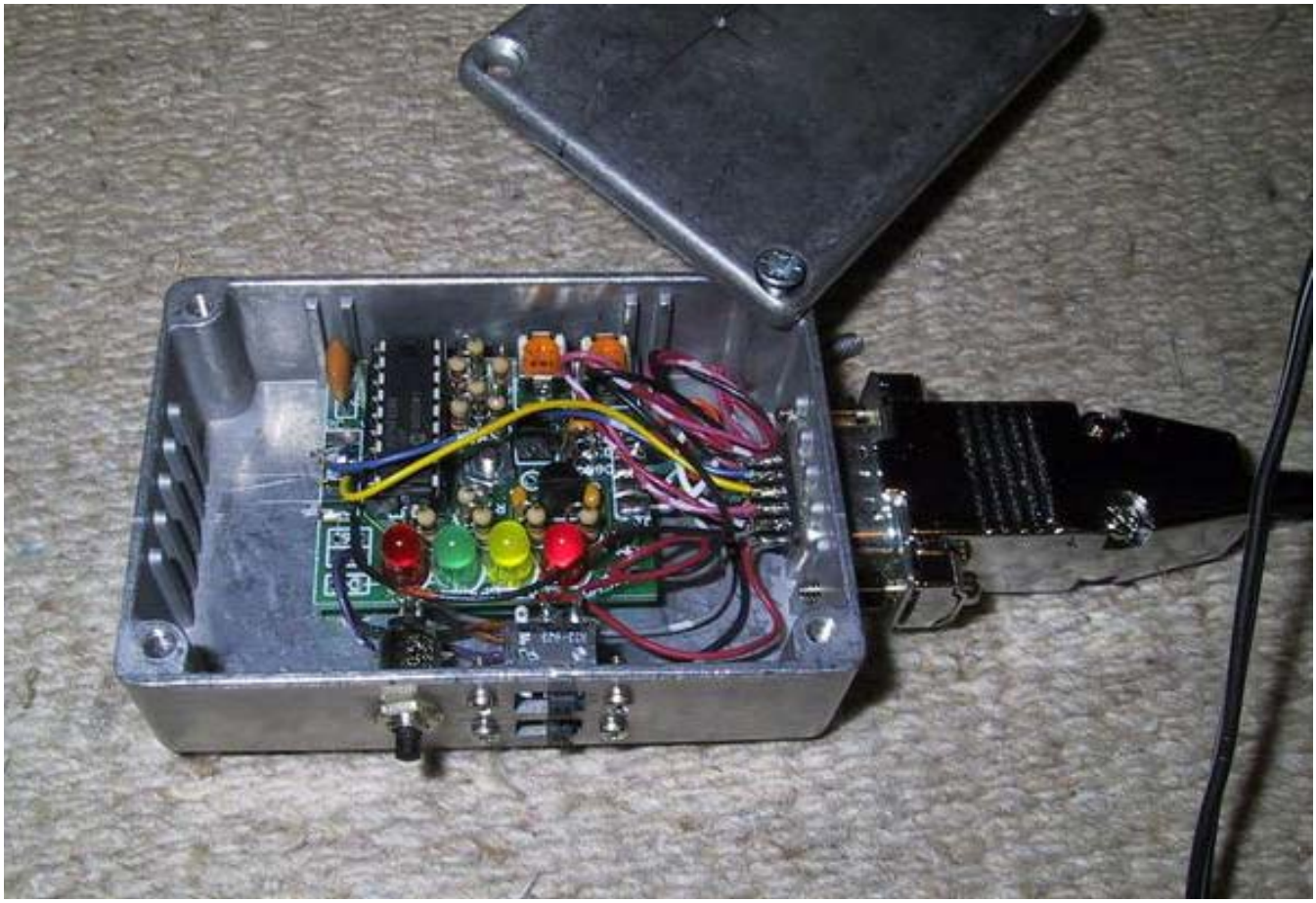
These days, trackers are more likely to be either a TNC and APRS-enabled radio (such as the Kenwoods

mentioned above), a standalone APRS-capable TNC such as a KPC-3 Plus along with a GPS, or an APRS-specific hardware widget such as a TinyTrak (along with a GPS receiver).
My favorite tracker is the $32 TinyTrak3 from Byonics (http://www.byonics.com). The unit is an inexpensive kit that does one thing, and one thing well – transmitting APRS positions. It requires only a GPS receiver and a radio – no TNC or computer required to run one (although you use a computer to configure it initially).
Several APRS software packages exist for displaying APRS stations on a map. The only one I've used is UI-View, which seems to be very popular. It's downloadable from the Internet, and there is a version of it which can be used "unregistered". The full-feature version (UI-View32) is downloadable as well, and requires you to purchase a registration key for ten British pounds (about $20 when I bought it a few weeks ago).
Just about any TNC can function as a digipeater, although some units have extra features that make them work especially well for APRS. The KPC-3 Plus is a very popular unit (and is the model of TNC that's working as a digipeater from the UW tower here in Laramie). -Dave KY7DR

Links to Dave's website with pictures of his TinyTrak3 portable tracker setup and other information – http://davidarush.com/hamradio/aprs/tinytrak/

Here are some pictures from Dave's site -

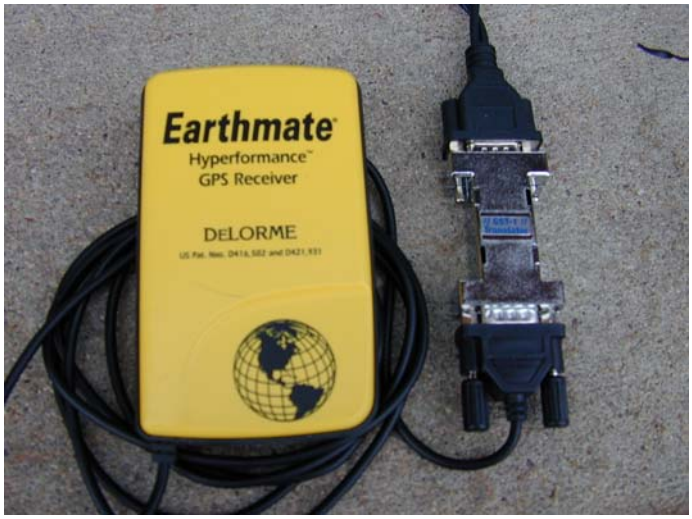
Daves portable TinyTrak-based field tracker includes battery pack, HT, BNC antenna connector, TinyTrak unit, Deluo GPS receiver and all required cables in a lunch-box size clear plastic weather tight enclosure.



Dave's TinyTrak in metal enclosure with Xmit now, alternate program and power switches

John KD7NAE's TinyTrak3 in long Radio Shack plastic box with DB9 connectors on the interior. Alinco DJ-V5 is connected and self-powered. Note the TinyTrak3 must be assembled with all components tight to the circuit board in order to fit in the small plastic box provided with the kit. This one doesn't fit. The larger box should allow added switches similar to Dave's for Xmit now, alternate program, etc.

KD7NAE tracker system using TinyTrak3, older style DeLorme Earthmate serial GPS with Byonics GST-1 converter for NMEA GPS output required by the TinyTrak, Yaesu FT90R mobile transceiver, sealed lead-acid 12 volt battery powering the GPS and FT90R and Radio Shack 5/8 wave 2 meter antenna. Radio cable from PacketRadio.com is the same as that used to interface to the Kantronics KPC3+ TNC. The TinyTrak3 is built and configured stock with 9-pin serial connectors soldered directly to the board. Power is provided for the TinyTrak from the 9 volt battery. GPS power/data cable is the standard accessory from DeLorme for running the GPS off 12 volt car power.



KD7NAE TinyTrak3 first impressions –

The kit went together with no major problems using a simple Weller soldering iron with its smallest soldering tip installed. Instructions and manual are easy to follow and complete. The unit must be programmed using the TinyTrak configuration utility from the Byomics.com site via a serial cable with null modem and gender changer. The only difficulty I encountered was with the GPS unit. It turns out the DeLorme Earthmate won't work under self-battery power (4-AAA bats internal) without fooling it into thinking it is being addressed by putting a little signal level voltage to it. Externally powering the unit with its vehicle power cable did the trick. I'm not sure if the Deluo GPS receiver has the same issue. Dave can report on its requirements.

I have a second TinyTrak3 kit that I haven't assembled yet. I may do some things differently. The stock DB9 connector installation soldered directly to the circuit board could be reconsidered depending on the type of enclosure employed. Dave's metal box provides some shielding that could prove advantageous. Mounting the connectors to the enclosure and allowing for switches and other connectors when selecting a box are all possibilities. Dave has lots of information on his site and there are many links on the Byonics.com site as well.

I have the UIview software and a sound card interface to get a mapping system set up on a laptop computer for field use. I'll be bothering Dave for advice to get this running in the coming month. I had hoped to use the DeLorme Street Atlas USA and Topo USA software for tracking. There is software to allow the use of older Street Atlas software versions for tracking, but apparently the newer versions are not supported. UIview appears to be a good way to go and reportedly works with sound card packet software, so that's what I plan to try out first.

I've had a lot of fun with this project and want to learn more about packet radio in general as well as APRS. It's a chance to combine amateur radio and computer interests and learn about the various data and image transmission modes. John KD7NAE

New and Upgraded Licensees Announced

VE examiner Jerry N7JT announced that two new Technician Class licensees and one upgraded licensee resulted from the examination session held on Saturday 24 April 2004.

Congratulations to new Technicians Nancy L. Sutherland KE7APO and Michael N. Thatcher KE7APN and to Barry Mather KB7VQV who has upgraded to Extra Class with a new call AD7CL.

Brent KC0FUP Retires as UARC Treasurer

Long time club treasurer Brent Gurnsey KC0FUP has retired as club treasurer due to his upcoming graduation from the University of Wyoming College of Business in May. The club wishes Brent the very best in the future. Brent has served UARC well as treasurer and advocate for fiscal responsibility. He will be missed. Brent reports he may be around Laramie this summer and if so will try to participate in Field Day. Bill Frazier N7SXC has agreed to assume Treasurer duties for the club for the remainder of Brent's term.

UARC MEETING MINUTES from 6 April 2004

Call to Order:

The April meeting was called to order by President John KD7NAE at 7:43 pm in room 2100 of the Engineering Building. 10 members were in attendance; all officers were present. Those attending were: David Rush KY7DR, Larry Dean K7UWR, Tony Arnerich KD7TA, Barry Mather KB7VQV, Doug Wheeler KD7W, Mac McDonald WB7K, Lynn Hamblin KB7SGP, Brent Gurnsey KC0FUP, John Harrison KD7NAE, and Doris Hutcheson KD7RQX.

Minutes of the Last Meeting:

Mac WB7K moved to approve the minutes of the March 2nd meeting as published in the Code of the West. The motion was seconded by Doug KD7W, all approved.

Reports:

Treasurer's Report-Brent KC0FUP gave the treasurer's report:

Bills paid:
Phone $21.^{73}.
Use Fee and Deposit, Curt Gowdy State park for High Plains Roundup $105.^{00}.
Regular account balance: $104.^{02}.
Maintenance fund balance: $938^{67}.
There was a discussion of the club's funds and High Plains Roundup funds.

Communications Reports:

Dead Dog Classic Bicycle Race:
Bill Wright AF7E called John KD7NAE he still needs at least 3 more volunteers for the race. Most volunteers will be finished by 1 or 2 pm on June 26th. The current list of volunteers includes AF7E, N&JT*, A7AY, KD7TA*(if possible), KD7RQX*, KD7NAE*, KD7FHE, N7SXC, NQ7Q, WB7K, KB7GSP(if possible). *Will participate with APRS. For best use of APRS there will be a laptop at Net Control (probably Doris KD7RQX) and another laptop at the race start (probably John KD7NAE). Dave KY7R will also have a laptop at the Spruce Mountain lookout tower.

Laramie Enduro Enduro Mountain Bicycle Race:
This race is August 1st. We may use Tom's repeater or the .820 Beacon Hill repeater for the event. There will need to be a high terrain station to fully cover the race course and relay back to town. We will contact Steve WL7CMA to see if he would like to work that position. Mac says that the same location the club used for last summer's search with the Albany County Sheriff's Office should work. The Albany County Red Cross is coordinating the use of an ambulance at the race site.

Field Day 26 June 2004:
The club will probably set up early for the event and broadcast from noon Saturday June 26th until noon the following day. Mac will provide his trailer for CW. Last year the club participated in HF, sideband and CW. There was discussion of participation in the free novice and satellite classes and the "get on the air" categories. There was speculation about the effectiveness of a microwave station.

VE Exams:

An exam will be held on Saturday, April 24th (National Test Day). Volunteer proctors are needed.

There may be discussion of proposed changes by the FCC to license classes at the Wyoming State Hamfest in Casper Memorial Day weekend. The new section manager, Bill Edwards will be there.

Old Business:

John KD7NAE reported that he has not heard from the Forest Service regarding the fee waiver for the repeater site. Mac suggests we contact the Section manager, Bill Edwards for assistance with this.

New Business:

Brent KC0FUP moved that the phone bill be paid for May through August at a cost of $86.92. Mac WB7K seconded and the club unanimously approved.

Brent KC0FUP moved that we accept Bill Frazier N7SXC's offer to complete Brent's term as treasurer. Barry seconded and all approved.

Tony KD7TA suggested that it was time to set up committees for Field Day. The following were assigned:

Doris KD7RQX	-	Food
Wayne NQ7Q	-	Equipment
Paul W7MO, Wayne NQ7Q, Fred KS7Q, and Mac WB7K	-	Set up
Mac WB7K, Jerry N7JT, Fred KS7Q, Steve WL7CMA	-	Power/Batteries

A trailer for equipment transportation is needed (last year we used Brent KC0FUP's trailer 10 x 20) Mac has his Tahoe and a 5 x 10 flat bed. Larry K7UWR also has a trailer available.
Dave KY7DR moved that the committees be approved. Mac seconded and the motion passed unanimously.

Dave KY7DR updated the APRS equipment available. He has one of the new Pocket Tiny Trackers (a tracker and transmitter in one kit for $89). It does not replace a high-power transmitter for distance and transmits every 45 seconds. He also says cables are available at Packet Radio and Buxcomm on the internet. Dave points out that it is important to tune the tracker with the lid closed and that the Altoids box seems to have the correct capacitance in that position.

Drawing:

This month's winner of the club drawing was Tony KD7TA's son, winning a subscription to World Radio.

Announcement:

There will be an astronomy club meeting at the North side fire Station, 23rd & Reynolds Thursday April 8th at 7:30 pm.

Meeting Adjourned:

Tony KD7TA moved with second by Lynn KB7SGP that the meeting be adjourned at 9:20 pm.

Doris KD7RQX

Fog enshrouds the gray hills north of Casper, WY at the west end of Casper Mountain known as Greene Place on 18 April 2004.

Photo by John KD7NAE

Submissions to COTW are welcome from all UARC members, area hams and persons interested in amateur radio communications and activities.

Printed copies of COTW are available from John KD7NAE.

Please contact

John M. Harrison KD7NAE
4431 Comanche Drive
Laramie WY 82072
email johnmh@uwyo.edu
phone 307-745-5833 home
307-766-2408 work
307-760-8154 cell phone