In this issue:

Meetings & Events

April 13
Club Meeting
Microcontroller based
CW Keyer
by Howard Smith, WA9AXQ
7:00 PM Church Basement
-·-·-

April 20
Field Day Meeting
St Mary School
-·-·-

April 27
Board Meeting
7:00 PM Church Office
-·-·-

May 2
Material Due for Next
Hamtrix
-·-·-

May 11
Next Club Meeting

The President's Shack

by Howard Smith, WA9AXQ

Amateur Electronic Supply is having their Superfest 2010 on Friday and Saturday, April 9th and 10th. I hope to see lots of you at our club table. I know some of you volunteered to man the table, and maybe some others will offer to help when you are there. This is great opportunity to promote our club and also a great opportunity to talk with the major Ham Radio suppliers. Hopefully, there will be some new equipment to look at.

In an email to the WARAC Board on March 31st, Lynn, K9KR, WIQP chairman, reported that he had received 214 electronic logs, and as of today, I have picked up 44 paper logs at the PO box. I am sure that there will be more logs coming with about 10 days to the submission deadline. It looks like the WIQP may have a new high for the number of participants this year. I hope lots of you had an opportunity to participate this year.

The Alphabet Contest is ongoing. The top prize had been decided, and it will be a gift certificate to the ARRL website for $26. The end is June 1st, and that will be coming quickly. Have some fun on the

Field Day Meeting

Tuesday, April 20 - 7:00PM
St Mary School,   9520 W. Forest Home Ave,   Hales Corners

ED SERUGA, KE9JJ, SK

By Tom Macon, K9BTQ

Edward A. Seruga, KE9JJ, of Wind Lake passed away on March 11. After high school in Milwaukee, he received a Mechanical Engineering degree from Marquette University. He worked for Badger Meter in Milwaukee for many years where he received numerous U. S. Patents in the liquid metering field. He retired from Badger at age 62.

Ed began an interest in ham radio operations at age 12, which he continued his entire life. He held an Extra Class. He was a member of Milwaukee Radio Amateur Club, (MRAC) for years as well as a WARAC member since 1993. He was also active on the Milwaukee-Florida Net in recent years, where he was known as "JJ".

He is survived by his wife of almost 61 years, Sophie and two children; Craig and Cheryl, both of whom live in the Waterford area. He is also survived by four grandchildren and four great-grandchildren. Ed was 85.

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From the Minutes...

By Lynn Tamblyn, K9KR
Secretary

Minutes of the General Meeting
March 9, 2010

The meeting was called to order at 7:03 PM by President Howard Smith.

Visitors – Chuck Merten, W9CHD, Ken Brown, KB9EX, Jerry Riedel, K9FI, Floyd Urbanski, AB9EX, Ted Stiller, WA9RDI, and Pancho Doneis, KA9OFA were introduced, after which WARAC members introduced themselves to the visitors.

Minutes – no minutes were approved as there was no regular meeting in February.

New Members – Robert Pasko, KC9QNG, Tom Nickel, KC9KEP and Bob Pirkel, WA9RUX, were voted into club members by those present.

ANNOUNCEMENTS

AES Superfest – Howard mentioned the AES fest and asked the membership to help with the club table, and to talk up the club at the fest. April 9 and 10.

WIQP – Howard mentioned WIQP happening March 14. He asked that all club members make an effort to participate. And be sure to ID yourself as a WARAC member. One of the members mentioned that 10, 15 and 40 have been open lately, so conditions should be better for this year's event.

Radio Expo - Phil Gural mentioned that this event, to be held in September at Belvedere, IL, will be one day event this year.

Alphabet Contest – Howard went over the rules for this club event. It runs till June 1 and is open for all club members.

Program – Using Antenna Analyzers by Chuck Craven, WB9PUB. After making a determination of who in the audience had an analyzer, and after mentioning that before you buy one, make sure of BC interference problems with

any unit, Chuck proceeded to discuss the Autek family of analyzers. He went thru the basic operation of both his HF and VHF models, showing us a block diagram layout of the frequency reading system and how it does the SWR process. These are low powered 100 milliwatt units, so SWR might not be right if you use higher power. He mentioned that if there is an interference problem, you might like to try the MFJ filter that takes out BC problems. Next he went into what you can do with an analyzer – things such as SWR, impedance (usually based on 50 ohms), as a unit to tune your tuner, to measure if coax is good, as a signal source to check out the pattern of a beam, build traps, determine velocity factor of coax, measure capacitance and inductance, and testing of a balun. Chuck had a mini-dipole with him, which he used to demonstrate the above. He indicated that if you buy one, you should make sure the frequency readout is right on and that the impedance is really 50 ohms. He did caution that there is a problem with VHF wherein current flowing on the shield of coax usually messed up the readings.

The meeting was adjourned at 8:27 PM, followed by refreshments and eyeball QSO's.

Respectfully submitted,

Lynn Tamblyn, K9KR
Secretary WARAC

Minutes of the Board Meeting
March 23, 2010

The meeting was called to order at 7:00 PM. by Chairman Howard Smith.

Board members present were: Charles Craven, Chuck Dellis, George Dunco, Tom Macon, Howard Smith, and Lynn Tamblyn...

WI QSO Party – Chairman Lynn gave the Board a brief report on the entry situation, in the 9 days since WIQP happened. He received 83 entries before the end of the day of March 14. As of this Board meeting, he had over 220 emails, although some were duplicates, as well as questions. He reported that Howard had picked up 29 pa-

A MICROCONTROLLER BASED
# CW KEYER

By Howard Smith, WA9AXQ

Today's modern ham radio has at least one microprocessor and may actually have several. For example, the front panel may use a general-purpose microprocessor with lots of inputs and outputs, a serial port, a USB port, and maybe even an Ethernet port. The filtering, signal modulation and signal demodulation is most likely done by a DSP (Digital Signal Processor). There may even be a dedicated microprocessor for the CW keyer function. Making all of these functions work, and then getting them to work together, may appear to be a tall order, but not so. It really breaks down into a large number of simple things that have to be done

Describing the task to be done and then programming a microprocessor to perform the task is not a hard concept to grasp. If the microprocessor hardware is fairly inexpensive (less than $20), and the development tools are free, this can be fun to experiment with. The September/October 2009 issue of *QEX* magazine features an article entitled *Build a Low-cost Iambic Keyer Using Open-source Hardware* by Richard Chapman, KC4IFB, in the September/October 2009 issue of *QEX* magazine.

Let's start by thinking about what is needed for a simple CW keyer. Two digital inputs are needed for the Dot and Dash paddles. There also needs to be a way to set the keying speed. This can easily be done with a potentiometer as long as the microcomputer has an analog input available. Two outputs are needed, one to key the transmitter and a second to drive a sidetone device. Looking beyond the sim-

ple keyer, several additional digital inputs would be nice, for such things as a mode input, so the keyer knows that you are sending commands to it rather than keying your transmitter. These could also be used to control the recording or playing of a stored message from memory device. Once the simple CW Keyer is working, then is it easy to add additional features.

The Arduino microcontroller board contains an Atmel Atmega328 microcontroller, which is a member of the Atmel AVR family of microcontrollers. This particular device has 32,768 bytes of flash memory to store the program, 8,192 bytes of RAM memory to store variables, 13 Digital I/O pins, and six Analog Input pins. The Arduino microcontroller board comes in many flavors at several price
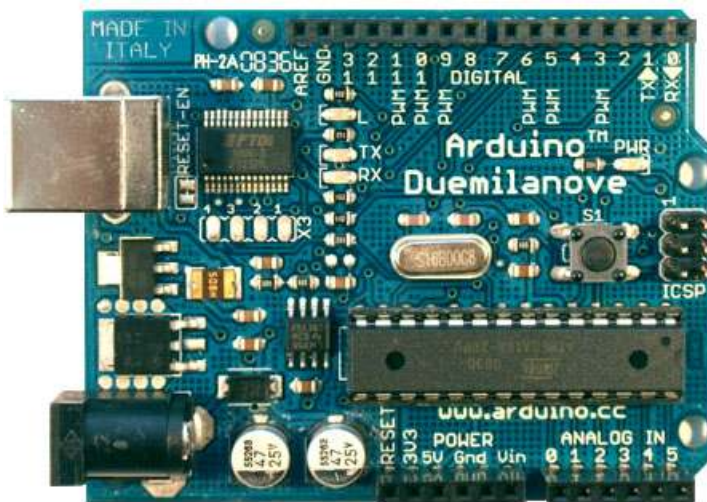
points and is available from a number of suppliers. I purchased a board for about $35, which also included a USB interface to the PC that will run the development software. Other boards are available for less than $20, but you will need a USB to serial cable.

The development software is a free download from www.arduino.cc. The software gives a simple IDE (Integrated

WARAC David Knaus Memorial Scholarship

Note: The application deadline previously listed in this sidebar was incorrect. The deadline for the 2010 scholarship was March 31, 2010.

Available to licensed Amateurs who are Wisconsin residents pursuing an Associate, Bachelor's or Graduate degree in any course of study. The next application deadline is March 31, 2011.

Visit the FAR website for additional information and application forms.

WARAC 2-Meter Net

Since we no longer have a repeater, our off-meeting night net has moved to 147.42 simplex. Please make a note of it!

- **7:00 PM**
- **1st, 3rd and 5th Tuesdays**
- **147.42 simplex**

Thanks!

Thanks and a tip of the editor's hat to the following contributors to this month's issue of Hamtrix

Howard Smith, WA9AXQ

Write an Article

This means You!

Please??

Scuttlebutt…

- AES Superfest is on April 9th and 10th this year, the weekend after Easter. As in recent years, our club will have a table with promotional material for our club. For more info on Superfest go to http://www.aesham.com/superfest.shtml.

- Ray Massie, WB9WNA, is recuperating from a broken hip suffered in a recent fall. He should soon be back to his apartment.

- Ron Crown, KA9JCP, is recovering from heart surgery and will have some time off work. Although he has some restrictions, it sounds like he is on the go.

- John, K9IAC, is vacationing in the Florida panhandle area. He is doing his usual mobile/portable thing and has been heard on 20m and 40m, plus early one morning on 75m.

- Have you submitted your WIQP log? If not, do it soon! The deadline looms - April 14. Unofficially, about 260 logs have been received so far.

- Lots of QSO Party activity this month. Six state and province QSO Parties remain in April: Montana, Georgia, Michigan, Ontario, Florida and Nebraska. For details, see http://www.warac.org/qp-list.htm or other contest calendars.

- Phil, W9NAW, has been scouting possible Field Day sites. Come to the FD meeting on April 20 to find out more.

- Our Alphabet Contest continues until June 1. The prize for the first member to report working all 26 letters will be an ARRL website gift certificate for $26. Use the Log Sheet on the next page and see last month's Hamtrix for Rules.

Do you have news that isn't listed here? It won't be here if ye editor doesn't know about it - call or email Tom, K9BTQ!

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Upcoming Meeting Programs

April 13
Microcontroller-Based
CW Keyer
by Howard Smith, WA9AXQ

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May 11
Digital Modes
by Chuck Dellis, W9WLX

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June 8
Field Day 2010
by Tom Macon, K9BTQ

———

Program suggestions?
Let us know - Contact a Board member!

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CW Keyer
(Continued from page 3)

Development Environment), which is used to enter programs, compile the program and download it to the Arduino board, and to help with debugging the program. The programs are written in a subset of the 'C' programming language. To make the Arduino board easier to use, a number of functions are provided that assist with the interface to the hardware. For example, there functions to read a digital input, to write to a digital output, to read an analog value from an analog input, and to delay for a fixed amount of time. These functions make it easier to write the software for the CW Keyer without having to deal will the Atmel AVR microcontroller directly.

Getting back to the CW keyer, when the dot paddle is pressed, it needs to send a string of dots. In the same way, pressing the dash paddle, it needs to send a string of dashes. The software needs to decide when either of the paddles is pressed. This is done within the loop() function. The loop() function executes all of the instruction within it, from top to bottom, and then goes back to the top, and does it again, continuing forever. The digitalRead() is an Arduino function which returns the value on one of the Input pins on the AVR microcontroller. The DOTIN is a defined constant, which identifies which Input pin the dot paddle is connected. Same for the DASHIN. The 'if ' is a 'C' language construct that tests the variable within the parenthesis. In this case, it tests to see if the DOTIN input has a high level. If it does, then the statements between the braces are executed. For the simple keyer, the loop() function is the following:

```
void loop()
{
    if (digitalRead(DOTIN))
    {
        send_dot()
    }
    else if (digitalRead(DASHIN))
    {
        send_dash()
    }
}
```

The send_dot() and send_dash() functions take care of the timing details for the dot or the dash. A dot is ON for a specified amount of time, and then OFF for the same amount of time. The KEYOUT and the SIDETONE bits are set HIGH at the start of the dot, and set LOW at the end of the dot, immediately after the first time delay. The second time delay provides the time between successive dots. The digitalWrite function is another Arduino supplied function that sets the value on an output pin of the AVR microcontroller. The constants KEYOUT and SIDETONE define specific output pins on the AVR. The

delay function is another Arduino supplied function that delays for precisely 1 msec intervals. The dotLenth is a variable that determines how many 1 msec intervals of delay are required. The send_dot() function is the following:

```
void send_dot()
{
    digitalWrite(KEYOUT,HIGH);
    digitalWrite(SIDETONE,HIGH);

    delay(dotLength);

    digitalWrite(KEYOUT,LOW);
    digitalWrite(SIDETONE,LOW);

    delay(dotLength);
}
```

The send_dash() function is identical, except that duration of the first delay is 3 times longer, because a dash is 3 dot times in length. The send_dash() function is the following:

```
void send_dot()
{
    digitalWrite(KEYOUT,HIGH);
    digitalWrite(SIDETONE,HIGH);

    delay(3 * dotLength);

    digitalWrite(KEYOUT,LOW);
    digitalWrite(SIDETONE,LOW);

    delay(dotLength);
}
```

Because of the three Arduino functions, I have been able to program the keyer application without having to work with the underlying AVR microcontroller details. This has made the programming task much simpler.

So, there is the simple CW keyer. It will work fine, but certainly has some rough edges. I'll talk about them at the meeting and will give a second version that resolves them.

I am looking forward to this presentation and I hope you will think about this a little bit, and bring your questions to the meeting.

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From the blonde in the next cube:

"I'd like to back up my hard drive but I can't find the reverse switch."

WARAC Alphabet Contest Log

	DATE	FREQ.	MODE	POWER	TIME	STATION WORKED	REPORT SENT	REPORT REC'D	TIME OFF	COMMENTS
A										
B										
C										
D										
E										
F										
G										
H										
I										
J										
K										
L										
M										
N										
O										
P										
Q										
R										
S										
T										
U										
V										
W										
X										
Y										
Z										

April 10 - Howard Smith, WA9AXQ
April 16 - John Zach, K9JAC
April 20 - Dick Wood, W9JBE
April 21 - Ron Crown, KA9JCP
April 26 - Josh Therrian, WI9JST
April 29 - Phil Tollefson, WA9AQL
May 1 - Paul Hass, KC9JET
May 8 - Dave Engelmann, WB9GZP

www.warac.org

Wedding Anniversaries

April 28 - John and Carol Zach

(Continued from page 2)

per logs at the post office box as of this Board meeting. Lynn noted that in 2007 we had a total of 263 entries, in 2008 we had 268 and last year, the Year of the QSO Party ARRL event, we had 291 total entries...

AES Superfest – the Board discussed a number of items regarding this event, to be held April 9 and 10, prior to the next regular club meeting. It was noted that only one person signed up for Friday while a bunch had indicated availability Saturday. The major discussion was how to improve the material the club had at our table, to try and promote ourselves to prospective members. Tom will work on a better presentation.

2010 Budget – Tom handed out his spreadsheet presentation. After discussion, by motion, the budget was accepted. The Board will revisit the 2010 budget again in September, when it starts its preparation of the 2011 budget.

Programs – April's program will be a software keyer by Howard, May will be on HF Digital modes, and June

will be on Field Day. The Board discussed other programs, such as: anatomy of a website; RTTY; and CWGET. Charles Craven talked about an idea he had for a different kind of homebrew program. It was unknown when Ron Gorski will be doing his K5D Desecheo Island DXpedition program that had been cancelled due no club meeting that night due to the weather.

Audit Of Club Books – the Board had some discussion on a possible committee get-together. Nothing has been scheduled.

Club Alphabet Contest – the Board had discussion on what the overall prize should be for the winner. By motion, a $ 26 ARRL Certificate was chosen.

Field Day Meeting – Tom mentioned that a meeting was set for April 20 for those interested.

The meeting was adjourned at 8:42 PM.

Respectfully submitted,

Lynn Tamblyn, K9KR
Secretary WARAC

President's Shack
(Continued from page 1)

air. Make those 26 QSO's.

Field Day is not that far away either. Tom, K9BTQ, Field Day chairman, is have a special Field Day meeting on Tuesday, April 20th, at 7:00pm at St. Mary Catholic School on Forest Home Avenue. Most of the details for the event will be reviewed at this meeting. If you have a suggestion, please plan to attend. I think one of the discussion points will be the site at Crystal Ridge. It seems that the site just does not produce the number of contacts that we would expect. If you have a suggestion for a

different site, please let Tom know.

This month I will be providing the program. I will use a CW keyer project as a simple application of how a microcontroller could be used in the ham shack. I have written an introductory article on the CW Keyer, which is included in this Hamtrix. I will discuss both the microcontroller, the CW keyer requirements, how the software is developed and demonstrate the results. I hope you have a few questions.

See you at the meeting.
Howard, WA9AXQ

West Allis Radio Amateur Club, Inc.
Tom Macon, K9BTQ
3547 S. 95 St
Milwaukee, WI   53228

WEST ALLIS RADIO AMATEUR CLUB, INC.

PO Box 1072
Milwaukee, WI   53201
W9FK
http://www.warac.org

See our Web Page or contact us for more information on

- WARAC Memorial Scholarships
- Wisconsin QSO Party
- Midwinter Swapfest
- Worked all Wisconsin Counties Award
- Amateur Radio Classes

WARAC holds meetings on the second Tuesday of each month and board meetings on the fourth Tuesday of each month. Meetings are held at 7:00 PM at:

**St Peter's Episcopal Church
7929 W. Lincoln Avenue
West Allis, WI**

Entry is off the alley at the rear of the church. A wheel chair ramp and chair-lift are available.