# MARANews

May 2020
Volume 59 Issue 10

http://www.w1mv.org https://www.facebook.com/w1mvmara/

https://twitter.com/search?q=Massasoit%20Amateur%20Radio%20Association&src=typd

**Next meeting is October 20, 2020 at 7:00pm. Informal meet and greet starts at 6:30pm. Talk-in is on 147.180+**

## Membership

The website has been updated with our current roster of paid members. If there are corrections, please drop an email to maranews@w1mv.org

## Presidents Notes

MARA Facebook page: Our Massasoit Amateur Radio Association Facebook page with club events, meetings, photos, etc. are occasionally updated so that it may be another resource for us on which to spark interest in our club, amateur radio and keep members informed of what we are doing outside of our club meetings and in our community. If you go to the "about" tab on our page you can find our http://www.w1mv.org/ web page for our present and past newsletters and other club information. Please send Phil N1XTB n1xtb@powersrvcs.com or Wendy KC1GTR kc1gtr.mara.@gmail.com any articles or photos you would like to see in our MARA newsletter, W1MV-MARA Website and Facebook page. Jeff N1ZZN has created a link to twitter to help get the word out even more!

## Secretary Notes - KC1GTR - Wendy White - Meeting 09/22/2020

**Open:** WA1BEE - Allen Hiltz called the zoom meeting to order at 8:00pm on the Bridgewater Repeater 147.180 (Tone 67.0) at 8:00pm.

**Attendance:** 7 were in attendance

**President** - WA1BEE - Allen Hiltz **Vice President** – N1ZZN – Jeff Lehmann

**Secretary** – KC1GTR – Wendy White **Treasurer** - N1XTB - Phil McNamara

AG1B - Richard Metcalf WA1TOM – Tom
KB1TEE – Rick Emord

**Secretary Notes -** KC1GTR - Wendy - update past newsletters and do new newsletter as there has been no official meetings for several months.

**Club Treasurer** – N1XTB – Phil – will discuss financial status next month at the in-person meeting. He is checking on the batteries that we need. WA1BEE – Alan asked for updated member listing, it is on the website and it is updated and current.

**Repeater Report** – N1ZZN – Jeff said stated raspberry pi and repeaters are working well. APR system, not everything is being sent out. KB1TEE - Rick made the motion to accept the notes and the motion was seconded by AG1B – Richard. All in favor, 0 opposed.

New member application was submitted from WB1FMA, Tech in Bridgewater, WA1TOM knows this member, Michael Philston. AG1B – Richard made motion to accept and KB1TEE – Rick seconded the motion. All in favor, 0 opposed.

Meetings - WAITOM – Tom said we have been granted use of the Bridgewater EOC again for our meetings. We will need to utilize the rear entrance.

WA1BEE – Allen - Start time will be 6:30 for social time and the meeting will start at 7:00pm.

Bill Temple is trying to publicize the ARRL Eastern Mass Division on all websites and platforms, can we add to ours. AG1B – Richard made a motion to add to our website and platforms and KB1TEE – Rick seconded the motion. All in favor, 0 opposed.

New Business – Special Events – Current Events – newsletters need to be updated and distributed. WA1TEE – Rick mentioned that they were being allowed back onto the ship the weekend of 9/18/2020 with safety and social distancing in place. Reminder that the first Sat in December is the Pearl Harbor remembrance.

Facebook page needs some TLC. Currently Jeff Lehmann and Barry are the admins. Wendy needs someone to add her as the admin so she can help bring it current.

KB1TEE – Rick made a motion to close the meeting and AG1B – Richard seconded the motion. All in favor, 0 opposed.

## HAM RADIO LOCAL AREA NETS

Any additions or corrections contact John – N1UMJ at: N1UMJ@arrl.net.
All Frequencies are in MHz and 6 Meters (50.0 MHz and up.) are FM Mode unless otherwise noted.

# MARANews

**Sunday:**

8:30 AM WA1NPO – WARPSN Net, Whitman ARC Rptr, 147.225 +, PL 67.0 8:45 AM
New England phone net, 3.945 +/--- LSB

**Daily:**

7:00 PM NE Cracker Barrel Net, Matt – W1AEM, NCO, 3.921.00 MHz LSB Pilgrim Amateur Wireless Assoc. 10 Meter Net
7:00 PM 28.375.0 USB Cape & Island Traffic Net, Mon. Tue. Thur.
7:00 PM Plymouth N1ZIZ Rptr, 146.685 – PL 131.8
7:30 PM Falmouth N1YHS Rptr, 147.375 + PL 110.9 Genesis ARC CW Training Net
8:00 PM Eastern MA 2 Mtr Traffic Net, Boston W1BOS Rptr, 145.230 – PL 88.5
8:00 PM Norfolk County Radio Association Net, , Walpole Rptr, 146.895 – PL 123.0

**Monday:**

6:00 AM Cape and Islands Weather Net, M-S, Dennis K1PBO Rptr, 146.955 – PL 88.5
8:00 PM Fairhaven Weather Net, SEMARA Rptr, 147.000 + PL 67.0
8:00 PM Norfolk County Emergency Preparedness Net, Walpole Rptr, 146.895 – PL 123.0
8:30 PM New England DMR net, DMR---MARC repeaters talk group 3181 New England
Falmouth ARA Net, Falmouth K1RK Rptr, 146.655 – PL 88.5
9:00 PM Boston ARC Rag Chew Net, Boston W1BOS Rptr, 145.230 – PL 88.5

**Tuesday:**

7:30 PM Plymouth N1ZIZ Rptr, 146.685 – PL 131.8
8:00 PM Fairhaven Weather Net, SEMARA Rptr, 147.000 + PL 67.0
8:00 PM Massasoit ARA Net, , Bridgewater W1MV Rptr, 147.180 + PL 67.0 (Except 3rd Tue!)
Genesis ARC 2 Mtr Rag---Chew Net,
8:00 PM Norwood Amateur Radio Club Net, Norwood Rptr, 147.210 + PL 100.0 220 MHz Day! Try to find a 220 Repeater near you and give a call out!

**Wednesday:**

7:00 PM Blackstone Valley ARC, 2 Mtr Simplex Net, 146.565
8:00 PM Cape and Islands ARES Net, Dennis K1PBO Rptr, 146.955 – PL 88.5
8:00 PM Fairhaven Weather Net, SEMARA Rptr, 147.000 + PL 67.0
8:00 PM Whitman ARC 10 Meter Rag---Chew Net, 28.333.0 USB - Except 1st Wed!
9:00 PM Waltham Wranglers Swap Net., Waltham W1MHL Rptr , 146.64 – PL 136.5

**Thursday:**

7:00 PM Genesis ARC CW Training Net, Plymouth N1ZIZ Rptr, 146.685 – PL 131.8 10 Mtr
8:00 PM Fairhaven Weather Net, SEMARA Rptr, 147.000 + PL 67.0
8:00 PM General Class Rag---Chew Net, 29.470.0 FM
8:30 PM Sturdy Mem. Hosp. ARC ARES Practice Net, K1SMH Rptr, 147.195 + PL 127.3 900 MHz

**Friday:**

8:00 PM Fairhaven Weather Net, SEMARA Rptr, 147.000 + PL 67.0

**Saturday:**

8:00 PM South Shore Skywarn Net, Bridgewater W1MV Rptr, 147.180 + PL 67.0

# MARANews

*VKEMCOMM* Echolink Conference node: 270177/IRLP 9508 (due to *WX---TALK* Echolink conference node: 7203/IRLP 9219 outage) Refer to: http://www.voipwx.net/

**Massasoit Amateur Radio Association Executive Board**

President - Allen Hiltz - WA1BEE
Vice President Jeff Lehmann - N1ZZN
Secretary Wendy White – KC1GTR
Treasurer: Phil McNamara N1XTB
Call Sign Trustee: Phil McNamara N1XTB

| | |
|---|---|
| **2M Repeater** | 147.180+ (Tone 67.0) |
| **440 Repeater** | 444.550+ (Tone 88.5) |
| **APRS Node** | Node 144.39 W1MV-1 |
| **Packet BBS** | 145.09 N1XTB-4 |
| **Packet Node Brockton** | 145.09 W1JOE-7 (BROCK) |
| **MARA Web page** | http://www.w1mv.org/ |
| **Facebook** | https://www.facebook.com/w1mvmara/ |
| **Newsletter Editor** | kc1gtr.mara@gmail.com |
| **ARC Web Page** | http://www.wa1npo.org |
| **Qsl via** | www.eqsl.cc |
| **Skywarn** | http://wx1box.org and www.powersrvcs.org/w1gmf/skywarn.htm |
| **Mailing Address** | P.O. Box 428 Bridgewater, MA 02324 |

**Monthly meetings** are held the 3rd Tuesday of each month, for time being, on the Tuesday Night net at 8:00pm on 147.180+

Our **Meetings-On-The-Air** are held all other Tuesday evenings at 8PM on 147.180+ and includes the Westlink News Report with the latest news about happenings in the world of Amateur Radio.

The **South Shore Skywarn Net** is held every Saturday evening at 8PM local time on 147.180+ and is open to all hams.

**VE Exams** are held the 2nd Saturday of every month, in Braintree contact Steve Cohen, W1OD via email w1od@arrl.net. Walk-ins are no longer permitted. We will be hosting VE exams at 8:45 at the Watson building. If you know of anyone planning to take an exam, please have them drop a note to Steve to confirm a reservation.

**http://www.hamradiolicenseexam.com/index.html**

MARANews

Courtesy of ARRL
The K7RA Solar Update
10/16/2020

Tad Cook, K7RA, Seattle, reports: Sunspots returned on October 9 – 12, with sunspot numbers of 24, 26, 15 and 15. No sunspot appeared on October 13, but late on Wednesday, October 14, **Spaceweather.com** reported a new emerging Solar Cycle 25 spot on our sun's southeastern limb, and a daily sunspot number of 12. The next day, NOAA reported sunspot numbers of 12 and 14 on October 14 – 15. Prior to October 9 no sunspots appeared for 2 weeks, and at that time we saw a sunspot number of 13 on September 23 and 11 on September 25.

Average daily sunspot number increased from 0 to 13.1, while average daily solar flux went from 71.8 to 73.1.

Geomagnetic indicators were lower, with planetary A index dropping from 7.1 to 2.7 and middle latitude A index from 6 to 1.9.

Predicted solar flux for the next 45 days is 74 on October 16 – 17; 72 on October 18 – 31; 70 on November 1 – 7; 73 on November 8 – 10; 72, 71, and 71 on November 11 – 13; 70 on November 14 – 23; 72 on November 24 – 27, and 73 on November 28 – 29.

Predicted planetary A index is 5 on October 16 – 19; 10 on October 20; 8 on October 21 – 23; 16, 38, and 38 on October 24 – 26; 26, 15, and 10 on October 27 – 29; 5 on October 30 – November 6; 10 on November 7; 5 on November 8 – 15; 10, 15, and 18 on November 16 – 18; 20 on November 19 – 20; 24, 14, and 10 on November 21 – 23; 8 on November 24 – 25, and 5 on November 26 – 29.

F.K. Janda, OK1HH, filed this report:

The geomagnetic field will be:

- quiet on: October 16, November 5 – 7, 10 – 13
- quiet to unsettled on: October 17, 31, November 3, 14 – 16
- quiet to active on: October (18,) 19 – 20, 28 – 29, (30,) November (1, 4)
- unsettled to active: October 22, (24,) 27, November 2, 8 ( – 9)
- active to disturbed: October (21, 23,) 25 – 26
- Solar wind will intensify on October (20 – 21,) 22, (23 – 25,) 26 – 29, (30,) 31, November (2 – 3,) 4 – 5, (9 – 11).

Note: Parenthesis means lower probability of activity enhancement."

Do you think the recent (or current) solar minimum is lasting a little too long? Check this **contrarian view**. Note the link **Victor20-Sep23-SSN_Forecasts.tab** toward the bottom of the page. It shows sunspot records and predictions from 1730 until 2101! I can't explain the numbers or how they were derived.

Perhaps someone can help this programmer on *Stack Overflow* with his *Python* program for performing linear regression with a sunspot database.

MARANews

On Thursday, October 15, on the local Puget Sound Repeater Group 146.96 MHz machine, I heard a couple of stations talking about gray-line, long-path propagation on 40 meters. After I inquired, Dean Holtan, N7XS of Camano Island, Washington wrote:

"On Wednesday, October 14, at 1530 UTC, I heard K6MYC and company working ZS6 stations. I also heard a station in the Netherlands, PA1A I believe. He was very loud along with the ZS6 stations, S-9 plus via long path.

"I was listening on my SDRplay RSPduo and a 160-meter loop at 100 feet. If I had gone to the shack I could have worked them. Thursday October 15, 20 meters was nicely open into Europe. KW7Y was working many G stations and EA short path at 1630 UTC. The above was all on phone.

"Last week on October 10 starting at 0130 UTC when I was on vacation, on 20 meters at our sunset I worked UN7JX and VU2MB along with many others in Asiatic Russia. I was called by a station in Lebanon but that was unsuccessful — all on FT8 running 500 W and my 160-meter loop at 100 feet from Camano Island, Washington."

Doug Behl, VE3XDB, linking via internet from Kitchener, Ontario, later wrote:

"Many amateurs today complain about propagation. Conditions haven't been great for several years, although there is some glimmer of hope that things may be getting better. Those experiencing the most frustration seem to be sideband operators. I have had some success over the past few years, using a couple of principles.

1. Use a mode that does better in poor conditions. These days, everyone jumps to FT8, a fantastic, low-power mode that does very well in poor conditions. However, I prefer a mode that creates a more traditional experience. CW and PSK31 are both very good modes for effective contacts when conditions are poor and may provide an opportunity to get to know the other operator a bit better.

2. Work the gray line. Gray-line propagation occurs at daybreak or at dusk. It is very interesting, because it occurs at a very particular time of day, opens up very quickly, and then, when time is up, it just disappears! Here is a **short, interesting article** on the science and experience of gray line propagation.

Following the above two principles, I have worked western and eastern Europe, the Caribbean and South America, as well as Oceania and Southeast Asia over the past few months, My modest station is a short, inverted L and an old Kenwood transceiver, usually running about 20 W and never more than 40 W. Best results have been achieved on 20, 30, and 40 meters.

To work the world when conditions are poor, I encourage others to try CW and PSK31, especially at dawn or at dusk. You may be surprised by the results achieved using a modest station. We need more operators in both of these modes!"

Ken Brown, N4SO wrote:

"Evidence pointed to a very good propagation path to Asiatic Russia, Japan, and to China on Saturday evening. From October 10, 2330 UTC, 21.074 MHZ, FT8: I first noticed UA0CA calling CQ from Asiatic Russia. It's rare

to see a UA0 on the screen, and so far I have never completed a contact. I have also never had completed a contact with China until Saturday evening.

“Calling UA0CA was noticed by BV1EK, China, and he called me and we were able to complete a contact. In this same period, I completed contacts with JA1FGX, JQ1CIV, and JG1SRB.

“A contact with UA0CA or with UA0ZK was not made, but I can appreciate the distance is roughly 5,000 miles away. I will try again on Sunday. Distance to UA0ZK, for example, is 5,391 miles.”

Sunspot numbers for October 8 – 14 were 0, 24, 26, 15, 15, 0, and 12, with a mean of 13.1. The 10.7-centimeter flux was 71.6, 73.1, 73.6, 72.9, 73.8, 72.3, and 74.5, with a mean of 73.1. Estimated planetary A indices were 3, 2, 2, 3, 4, 3, and 2, with a mean of 2.7. Middle latitude A index was 2, 1, 2, 2, 3, 3, and 0, with a mean of 1.9.

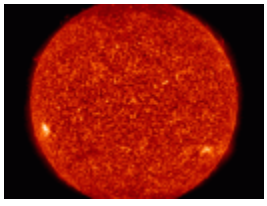
For more information concerning radio propagation, **visit** the ARRL Technical Information Service, **read** “What the Numbers Mean…,” and **check out** K9LA’s Propagation Page.

A propagation bulletin **archive** is available. Monthly charts are no longer be updated on this page. For customizable propagation charts, visit the **VOACAP Online for Ham Radio** website.

**Instructions** for starting or ending email distribution of ARRL bulletins are on the ARRL website.

**Share** *your* reports and observations.

## Photo Gallery

- 

## What's New?

**FCC EXTRA CLASS QUESTION POOL REVISED JULY 1, 2020**
The FCC question pool for Extra Class license examinations has been revised and is effective for exams conducted on or after July 1, 2020. Study materials are available through the **ARRL store**.

# MARANews

**EXAM SESSIONS**
List your ARRL Volunteer Examiner Coordinator (**VEC**) sponsored exam sessions quickly and easily using our **online form**. Registering well in advance of the exam date ensures the information reaches potential candidates!

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## Be a Volunteer Examiner


Volunteer Examiners (VEs) are licensed radio amateurs holding a General Class license or higher, who offer their time to administer the FCC licensing tests.
**Learn More**

In The News:

## FCC Orders Amateur Access to 3.5 GHz Band to "Sunset"
10/08/2020

Despite vigorous and continuing opposition from ARRL and others, the FCC has ordered the "sunsetting" of the 3.3 – 3.5-GHz amateur radio secondary spectrum allocation, effective on November 9. The decision allows current amateur activity on the band to continue, "grandfathering" the amateur operations subject to a later decision. The FCC proposed two deadlines for amateur operations to cease on the band. The first would apply to the 3.4 – 3.5 GHz segment, the second to 3.3 – 3.4 GHz. The FCC will establish the dates once it reviews additional comments.

"We adopt our proposal from the *Notice of Proposed Rulemaking* to remove the amateur allocation from the 3.3 – 3.5 GHz band," the FCC said in its *Report and Order* (***R&O***) and *Further Notice of Proposed Rulemaking* in WT Docket No. 19-348, adopted on September 30 and **published** October 9 in *The Federal Register*, *R&O*. "[W]e adopt changes to our rules today that provide for the sunset of the secondary amateur allocation in the band, but allow continued use of the band for amateur operations, pending resolution of the issues raised in the *Further Notice*."

The September 30 *R&O* followed a 2019 FCC *Notice of Proposed Rulemaking* (*NPRM*) in which the FCC proposed re-allocating 3.45 – 3.55 GHz for "flexible-use service" and auctioning the desirable "mid-band"

spectrum (generally defined as between 1 GHz and 6 GHz) to 5G providers. These and other recent spectrum-repurposing actions stem from the MOBILE NOW Act, enacted in 2018, in which Congress directed the Commission to make additional spectrum available to auction for mobile and fixed wireless broadband. The FCC action is consistent with worldwide allocations adopted by the ITU for these frequencies.

In the run-up to the Commission's decision, ARRL met with the FCC's professional staff to explain its concerns and to answer questions. Subsequently, ARRL met with the wireless advisors to the FCC Chairman and two Commissioners. In those meetings, ARRL reiterated that continued secondary status for amateurs will not impair or devalue use of this spectrum by the primary licensees intending to provide 5G or other service. ARRL noted amateur radio's long history of successful coexistence with primary users of the 9-centimeter band, sharing this spectrum with the federal government users and secondary, non-federal occupants.

ARRL pointed out that vital links in amateur television and amateur radio high-speed mesh networks using the band have been especially valuable during such emergency situations as the **wildfires** currently raging on the west coast. Deleting the amateur secondary allocation will result in lost opportunities for experimentation and public service with no public interest benefit to make up for that.

ARRL argued that deleting the secondary allocation would waste the scarce spectrum resource, particularly in areas where commercial services often do not construct full facilities due to small populations. The FCC action means that amateur radio will lose access to the 3.5-GHz secondary allocation even where commercial operations do not exist. ARRL told the Commission that it should not intentionally allow this spectrum to be vacant and unused, wasting the public resource, when amateurs can use some portion of it in many geographic areas with no detriment to any other licensee, just as it has in the past. ARRL argues that amateur operations should be permitted until and unless an actual potential for interference exists.

Deletion of the 3.3 – 3.5 GHz secondary amateur allocation will become effective on November 9, but amateur radio operation as of that date may continue while the FCC finalizes rules to license spectrum in the 3.45 – 3.55 GHz band and establishes deadlines for amateur operations to cease. The FCC proposed allowing amateur operation in the 3.3 – 3.4 GHz portion of the band to continue "pending further decisions about the future of this portion of the spectrum," the timing for which is unknown. The Commission proposed to mandate that operations cease in the 3.4 – 3.5 GHz portion when commercial licensing commences for the new 3.45 – 3.55 GHz "5G" band, which is predicted to begin in the first half of 2022.

"[W]e seek comment on whether it is in the public interest to sunset amateur use in the 3.3 – 3.55 GHz band in two separate phases, e.g., first above 3.4 GHz, which is the focus of [the *R&O*] and later in that portion of the band below 3.4 GHz," the FCC said.

ARRL expressed gratitude to the many members and organizations that joined ARRL in challenging the FCC throughout this nearly year-long proceeding. They included multiple radio clubs, weak signal enthusiasts, moonbounce participants, and the Amateur Radio Emergency Data Network (AREDN), the Amateur Television Network (ATN), AMSAT, and Open Research Institute (ORI).

ARRL will continue its efforts to preserve secondary amateur radio access to 3.3 – 3.5 GHz. Members are invited to share comments by visiting **www.arrl.org/3-GHz-Band**.

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"We recognize that any loss of our privileges will most directly impact radio amateurs who use the frequencies to operate and innovate," said ARRL President Rick Roderick, K5UR. "Such instances only embolden ARRL's role to protect and advocate for the Amateur Radio Service and Amateur Satellite Service. There will be continued threats to our spectrum. So I urge all amateurs, now more than ever, to strengthen our hold by being ceaseless in our public service, experimenting, and discovery throughout the radio spectrum."

## Amateur Radio Emergency Service® (ARES)

- Download the ARES Manual [PDF]
- ARES Field Resources Manual [PDF]
- ARES Standardized Training Plan Task Book [Fillable PDF]
- ARES Standardized Training Plan Task Book [Word]

**Amateur Radio Emergency Service® (ARES)**

The Amateur Radio Emergency Service® (ARES) consists of licensed amateurs who have voluntarily registered their qualifications and equipment, with their local ARES leadership, for communications duty in the public service when disaster strikes.

**ARES Membership Requirements**

Every licensed amateur, regardless of membership in ARRL or any other local or national organization is eligible to apply for membership in ARES. Training may be required or desired to participate fully in ARES. Please inquire at the local level for specific information. Because ARES is an Amateur Radio program, only licensed radio amateurs are eligible for membership. The possession of emergency-powered equipment is desirable, but is not a requirement for membership.

**How to Get Involved in ARES**

Fill out the **ARES Registration form** and submit it to your local Emergency Coordinator.

## Volunteers Wanted!

- If you're an individual Emergency Communication volunteer…-

  • You need to be trained. In order to provide support in the event of an emergency—or even in a non-emergency situation—you need to have the proper training and licensing. Learn more about the ARRL Emergency Communications Training course.

  • You need to be equipped with sustaining skills. What if when you get to a location, there is no food and the sleeping conditions are undesirable? Before you leave on your assignment, you need to make sure you have coping skills that enable you to be able to do your job operating under the conditions you are assigned to—from hardship conditions to making sure you're able to work the equipment.

• You need to prepare your family for your absence. When you leave home and head for a disaster area, your family has to be both physically and mentally able to cope. After a disaster, when a volunteer comes home, he or she can be confronted by some mental health issues, for which there are several resources. Many volunteers experience everything from fatigue or exhaustion to depression.

• You need to find ways to volunteer. You would first want to become a member of your local ARES, CERT, RACES or local emergency management organization. Then try the American Red Cross or Web sites like Ready.gov.

## Happening Now - Now Open! The 15th Annual ARRL Online Auction

10/15/2020

The 15th Annual **ARRL Online Auction** is now open for registration and bidding. The 2020 ARRL Online Auction includes a large assortment of *QST* "Product Review" items, including an SPE Expert 1.5K-FA HF amplifier, an ACOM 120S 160 – 6 meter linear amplifier, a Yaesu FTDX101D HF + 6-meter transceiver, an Icom IC-9700 multimode VHF/UHF transceiver, and a RigExpert Stick 230 antenna and cable analyzer. Some vintage gear is also up for bid.

The ARRL Online Auction also features a wide assortment of vintage books, including past editions of *The ARRL Handbook*, *Radios for Everybody*, *CQ Ghost Ship*, and the 1909 "Electricity" volume — in souvenir condition — from the *How Does It Work Series.*

The Auction is sponsored by **GigaParts**.

Bidders will also find a large variety of novelty items, ARRL Lab "Mystery Junque Boxes," ARRL-branded gear and clothing, and items donated by the cast and crew of the Fox Television's *Last Man Standing*, starring Tim Allen as Mike Baxter, KA0XTT.

In order to place a bid, you must register on the ARRL Online Auction website. You may browse the website and scope out those "must-have items" without registering, and you may register at any time during the auction.

If you're on the lookout for some great bargains — and some great fun — plan to check out the 2020 ARRL Online Auction. The auction concludes at 10 PM EDT on October 22.

Proceeds from our Online Auction benefit ARRL education programs, including activities to license prospective radio amateurs, strengthen Amateur Radio Emergency Service (ARES®) training, offer continuing technical and operating education, and create instructional materials.

**Visit** the ARRL Online auction website for more information.

73 all be safe and we look forward to seeing everyone next Tuesday.