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- 1000-1050 **20 Years After PSK-31**  
Riverside A *Presenter:* Randy Hall (K7AGE)  
PSK-31 was introduced in 1998 and has lead the popularity of modern digital modes. The power of the PC, simple audio interfaces and free software made it easy to get on PSK-31. Randy's presentation covers the early days of PSK-31, radio interfaces, and many of the digital modes that followed PSK-31 including FT8.
- 1000-1050 **ARRL Member Forum a**  
Riverside B *Presenter:* Mike Ritz (W7VO); Mark Tharp (KB7HDX)  
Come and learn about issues facing the ARRL, and ask questions of ARRL officers and staffers. Attendees will include Rick Roderick, K7UR, ARRL President, Howard Michel, WB2ITX, ARRL CEO, Mike Ritz, W7VO, Northwestern Division Director, Mark Tharp, KB7HDX, Northwestern Division Vice Director, Bob Inderbitzen, NQ1R, ARRL Marketing Manager, and several section managers.
- 1000-1050 **Operating Portable and Having Fun!**  
Riverside C *Presenter:* Budd Drummond (W3FF)  
Budd has fun with amateur radio, antenna building, and life! Come and get infected with a spirit of fun and exploration.
- 1000-1050 **Intro to Software Defined Radio (SDR)**  
Seaside A *Presenter:* Steve Brightman (KI5ENW)  
Software-defined radio offers more flexibility than past radios. Learn how to understand and appreciate what they can and cannot do.
- 1000-1050 **Tillamook Rock Lighthouse IOTA Expedition Plans**  
Seaside B *Presenter:* Yuri Sushkin (N3QQ)  
Yuri will present a brief history of the Tillamook Rock Lighthouse, the one past expedition by Lanny, W5BOS, and the plans and challenges for the proposed expedition.
- 1000-1050 **Using what I know from Ham Radio to start a Career**  
Seaside C *Presenter:* Jeff Hilliard (AK6OK)  
Presentation mainly for the younger folks to spark some ideas about how they could use the things they have learned in amateur radio to start a company and make a living.
- 1000-1050 **Intro to Ham Radio, and How to Earn a License**  
Sunrise *Presenter:* Delvin Bunton (NS7U)  
Have questions about this hobby called ham radio? Or how to get into the hobby and earn a license. Come learn the basics and ask questions.

- 1100-1150 **Getting Started with FT8 Digital Mode**  
Riverside A *Presenter:* Rick Smith (KT7G)  
Getting started with FT8:  
  - What is it?
  - How do we get on it?
  - Setting up and running the mode is explained with secret tips for more QSOs.
- 1100-1150 **ARRL Member Forum b**  
Riverside B *Presenter:* Mike Ritz (W7VO)
- 1100-1150 **How I Shrunk the Amp**  
Riverside C *Presenter:* Eric Swartz (WA6HHQ)  
Learn how Elecraft engineers shrunk the amp.
- 1100-1150 **The CW Way of Life - Why Morse matters in an FT8 world**  
Seaside A *Presenter:* Chris Rutkowski (NW6V)  
Does CW still have a place in ham radio with the profusion of digital modes such as FT8? You bet! Come learn why Chris believes CW is worth learning, and remains viable in this digital age.
- 1100-1150 **Go Kits for VHF/UHF and HF**  
Seaside B *Presenter:* Scott Honaker (N7SS)  
Making your emergency radio gear portable is not only valuable for supporting emergency communications and events but it can make a clean and compact shack at home as well. Come see the huge variety of possibilities and learn how to design an appropriate power system, manage weight and volume and consider some antenna options.
- 1100-1150 **Recruiting New Hams**  
Seaside C *Presenter:* Bob Inderbitzen (NQ1R)  
For ham radio to survive and thrive in the 21st Century, we need success finding and recruiting new hams. Come learn some ideas you might try in your area to increase the ham population.
- 1100-1150 **Get on the air, VHF/UHF and HF**  
Sunrise *Presenter:* Delvin Bunton (NS7U)  
Learn how to get on the air for the first time with either an FM or HF radio. The general principles are the same but some practices differ. Bring your questions, concerns, and gain confidence.
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1200-1250 **Easy antennas for VHF and UHF**

Riverside A *Presenter:* Tim Dezelle (KI7FBQ)

1. Quarter Wave Ground Plane Antenna.
2. Rollup J Pole Antenna.
3. Tape Measure Yagi.
4. Low cost Commercial options.

1200-1250 **FlexRadio: Benefits to Rag-chewers, Dxers, and Contesters**

Riverside B *Presenter:* Steve Hicks (N5AC)

FlexRadio, the Software Defined Radio pioneer and leader in the amateur radio market, has brought leading-edge capabilities, operating methods and equipment to the amateur world for over 15 years. In this session, we will discuss the benefits for contesters, rag chewers and DXers of Software Defined Radios. The discussion will include the differences between SDRs and more traditional HF radios (superheterodyne and homodyne) with an emphasis on the technology differences, the unique operating benefits afforded by those differences and cost advantages. In addition, we will discuss multiFLEX, a new capability unique in the world of amateur radio. This new capability, included in SmartSDR v3.0, will be explored and the operating benefits for a different types of operators will be discussed.

1200-1250 **Repeater Coordination in Western Washington**

Riverside C *Presenter:* Kenny Richards (KU7M)

Come learn about the process for coordinating repeaters in Western Washington and the challenges faced with managing a limited and shared resource across many different groups in Amateur radio. In addition a proposal will be presented for how the repeater sub-bands could be transition to narrow band (12.5 khz and/or 6.25 khz) channels.

1200-1250 **EYEWARN - Visual Reporting for our Emergency Coordinators**

Seaside A *Presenter:* Tim Kuhlman (KD7RUS)

EYEWARN is a visual situation network for ham radio operators to collect information during a local disaster. This information can help our emergency coordinators to target specific areas when first-responders are overwhelmed. This seminar will explain how EYEWARN works and how you can establish a network for your community.

1200-1250 **Parks on the Air - Portable Operation Fun**

Seaside B *Presenter:* Scott Green (K7JSG)

What is Parks on the Air and how you can participate. At the very least Scott may encourage you to go outside and breath the fresh air while playing with radios.

1200-1250 **Effectively Welcome the New Ham**

Seaside C *Presenter:* Michael Burnette (AF7KB)

Some estimates say only half the people who take their Technician exam will ever really participate in the hobby. The rest of the estimates are even more pessimistic. What's missing? How do we effectively move the new ham from, "I passed my test; now what?" to "That's what!" and have them enjoying and contributing to the hobby? A look at a few clubs' efforts, and what worked.

1200-1250 **Welcome to the National Traffic System (NTS)**

Sunrise *Presenter:* Kevin Fox (KU0F)

The National Traffic System (NTS) began in 1915 and is the Relay part of the American Radio Relay League. The NTS remains relevant even today but is lightly used most of the time. Come learn more about NTS, what is it and why we have it. Also learn why the ARRL has a renewed interest in the NTS.

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1315-1415

## **Low Band Receiving Antennas In Depth**

Riverside A

*Presenter:* Lee Strahan (K7TJR)

1. Personal background with Licensed background, & Low Bands background
  - A. Audio sample of what is a Receiving antenna.
2. Yes, receiving antennas are different than transmitting antennas.
  - A. Harold Beverage patent 1920's
  - B. Flurry of designs around year 2000
  - C. Receiving antennas can be quite small
3. How does one rate or decide which receiving antenna is best
  - A. SNIF, RDF, MDF, or just loud.
  - B. Receiving antenna Physical limitations (acreage)
  - C. Each installation can be different including interaction with objects
  - D. Arrays of verticals passive or active.
4. Where does Eznec or 4Nec2 fit in to receiving antennas.
  - A. How to calculate RDF with Eznec
  - B. 4Nec2 calculates RDF for you plus 3D patterns
  - C. Is the pattern always important
  - D. M T Ma and his equations for maximum directivity.
  - E. Why is it impossible to build for maximum directivity
  - F. You can get pretty close to maximum.
5. Comparison charts of receiving antennas
  - A. Usual plots from Eznec of typical patterns
  - B. 3D plots from 4Nec2 and what they show better
  - C. RDF still means the most irrespective of the pattern.
  - D. Pattern of the audio sample
6. Where does K7TJR fit into this.
  - A. Show and tell of my first RX antenna. Its all about phase
  - B. Hi-Z amps are crucial as well as common mode isolation
  - C. What I make now for Hi-Z
  - D. Rx antennas all over the world.
7. What does the future hold for improvements
  - A. Headway from here is a steep slope at 76 years old
  - B. Electronics not likely to get that much better
  - C. The best path ahead for better receiving antennas now.
  - D. K3LR super station
  - E. Thank You for attention
8. Q&A

1315-1415

## **Future of Ham Radio - The Changing Landscape**

Riverside B

*Presenter:* Rick Roderick (K5UR)

The landscape of Amateur Radio is ever-changing. It's certainly different now than "back in the day." Over half of the Hams today are Technician class license holders. How do we meet the challenges of recruiting and retaining the next generation of Amateur Radio operators when there are so many other things to attract their attention? This session will explore this changing landscape and the future of Ham Radio.

1315-1415 **Can RF-Receivers detect Earthquakes?**

Riverside C *Presenter:* Alex Schwarz (VE7DXW)

Evidence has been mounting that it might be possible to detect earthquakes by measuring the changes in the ionosphere. The RF-Seismograph team has been collaborating with Earthquakes Canada to find a correlation between HF propagation and earthquakes. A distinct event that occurred on Nov 1st (M5.0 off the coast of Vancouver Island) caught the eye of the RF-Seismograph team and set off a frenzy of actions. We are looking for correlation between earthquakes that are bigger than M6.0 and the 4 years of data we accumulated. Do tsunamis create RF-signatures? What else? Now we have 4 years of data to investigate.... Alex (VE7DXW) will talk about how this discovery almost did not get discovered!

1315-1415 **Affordable Software Defined Radio Receiving with an RTL-SDR**

Seaside A *Presenter:* John Bucsek (KE7WNB)

The RTL-SDR V3 USB dongle, based on the RTL2832U DVB-T TV tuner chipset can receive from 500kHz to 1.75GHz. Discover how to use this affordable (\$20) receiver.

1315-1415 **Characterizing Base Station Performance Using Advanced Measurements and Drones**

Seaside B *Presenter:* Steve Kometz (N7KP); Tom Brinkoetter (WA9ETO)

Drones can offer many benefits for managing radio sites. Photography of what is going on at the tops of towers is an obvious benefit. Aerial RF measurements is another benefit. A signal generator mounted on a drone can allow downtilt measurements of VHF and UHF repeater antennas and even support vehicle antenna pattern measurements. A receiver on a drone can hunt for interference. Steve (N7KP) and Tom WA9ETO) review their work in using drones at RF sites for the past 2 years.

1315-1415 **Why Upgrade to General or Extra?**

Seaside C *Presenter:* Dave Ellison (W7UUU)

Presentation covers band by band all the antenna requirements for various HF bands, types of activities you can expect, and highlights many of the benefits to upgrading to General and beyond.

1315-1415 **Amateur Radio Repeater Technician 101**

Sunrise *Presenter:* Marc Peterson (W7PM)

This class is for those who want to learn more about what it takes to become an Amateur Radio Repeater Technician. The seminar will cover repeater setup, programming, RX & TX alignment alignment and general Service Monitor use.

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1510-1600 **The Storied History of the Ham Radio Callsign**

Riverside A *Presenter:* Mike Ritz (W7VO)

Ever wondered how call signs evolved? They simply did not exist before Marconi sent his famous message from Cornwall, England to St. John's, Newfoundland, Canada. There are more layers to the history than most of us know about.

- 1510-1600 **Planning a suitcase DX-pedition**  
Riverside B *Presenter:* Everett "Ev" Curry (W6ABM)  
If you've ever wondered how to go somewhere semi-exotic and play radio on the other side of a pile-up, come learn how to plan your own suitcase DX-pedition. In most cases, no boats required.
- 1510-1600 **Raspberry Pi Radio Projects**  
Riverside C *Presenter:* David Haworth (WA9ONY)  
The Raspberry Pi is a popular low cost single board computer that can be used in amateur radio projects.  
This seminar covers how to setup a Raspberry Pi computer and how to use it in SDR radio projects.  
For more information on WA9ONY Raspberry Pi radio projects go to [www.stargazing.net/david/RPi/hrrpi.html](http://www.stargazing.net/david/RPi/hrrpi.html)
- 1510-1600 **Introduction to Digital Amateur Television (D-ATV)**  
Seaside A *Presenter:* Chris Arneson (KU7PDX)  
8VSB, DVB, ATSC, H.264?! Learn the basics of the digital transmission of video over amateur radio frequencies. We'll discuss formats and type of equipment to look for in the surplus market to get started in a small scale.
- 1510-1600 **RF Cable Principles**  
Seaside B *Presenter:* Benjamin Abramson (KG5MNH)  
This Presentation gives the audience the ability to recognize RF cable core concepts. Concepts included in this presentation are: understanding coaxial cable construction, coax construction materials, impedance, loss characteristics, SWR, phase matching, and system design and application. At the end the presentation an individual will have an understanding of how to decide which coaxial cable is the best product for their application based on knowing frequency range, length, and power rating.
- 1510-1600 **Go Take a Hike! Simple and Successful Portable QRP Operating**  
Seaside C *Presenter:* Shel Radin (KFOUR)  
Shel's presentation will show how easy it is to go QRP portable with a simple, lightweight setup, and achieve great results. He will describe and demonstrate his portable operation, including the rig, antenna, power source, and accessories. Included are pictures and results from outings, showing the variety of places to enjoy operating.
- 1510-1600 **Providing Emcomm Services Directly to the Public**  
Sunrise *Presenter:* Marty Woll (N6VI)  
Most disaster-communications training these days focuses on working with government agencies and big NGOs, but what about serving your neighbors and local community groups? Learn to become an advisor, a trainer and a resource for those around you. Help them get better at helping themselves. No uniforms or badges required!

- 1610-1700 **7th Area QSL Bureau**  
Riverside A *Presenter:* Rocky Evans (NE7D)  
If you make DX contacts and haven't connected with the Bureau, you are not receiving QSL cards that are being directed to you via the Bureau. Any op working DX needs to be aware of how "The Buro" works and how to use it effectively. Learn exactly how your QSL Bureau functions and what it can do for you (and what it can't). Lots of tips on how to set up an account for your callsign that maximizes what the Bureau can offer.
- 1610-1700 **HamWAN**  
Riverside B *Presenter:* Scott Burrows (N7DOD)  
HamWAN digital networks utilize 5GHz microwave radio equipment for use by amateur radio operators, emergency preparedness groups, and public safety locations. Come see what this technology is all about and what it could do for you.
- 1610-1700 **DRAWS - Digital Radio Amateur Work Station**  
Riverside C *Presenter:* Bryan Hoyer (K7UDR)  
This is a complete turnkey Raspberry Pi based solution with 2 Radio Interfaces for all aspects of Digital Radio including:  
\* Packet 1200/9600 Winlink APRS Client and Server and ARDOP  
\* HF Modes FLDIGI WSJT\_X JS8Call  
\* and more
- 1610-1700 **YL Forum- Prepare for Public Service**  
Seaside A *Presenter:* Barbara Yasson (AC7UH); Linda Ford (AA6MR)  
Learn what may be expected and how to prepare for a public service event. Typical events include local parades, food collection, runs and walks of various types, and maybe during emergencies.
- 1610-1700 **Network Radios**  
Seaside B *Presenter:* Steve Simmons (KE7ZMA)  
Learn about network radios, how they work, and how to get started using them.
- 1610-1700 **Ham Legal Forum**  
Seaside C *Presenter:* Phil Kane (K2ASP)  
Open discussion on legal issues that hams may face.
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## Sun

- 1000-1050 **Ham Radio Travels**  
Riverside A *Presenter:* Randy Hall (K7AGE)  
Presentation about Randy's travels this year to TWIT studios for ham nation, pacificon, AMSAT Huntsville, Quartzfest, operating from the Titan Missile Museum, Kennedy space center and Hamcation.

1000-1050 **DMR Basics and PNW DMR Update**

Riverside B *Presenter:* Brad Estill (N7ER)

This session will introduce DMR (Digital Mobile Radio) for amateur radio, give an overview of the PNW DMR system, update users on what's happening in the PNW DMR system today, and (hopefully) have time for Q&A from the attendees.

1000-1050 **How to Build a Repeater**

Riverside C *Presenter:* Jeff Hilliard (AK6OK)

Building a repeater guarantees you will learn new things as you build a real system. Listen to some of the challenges and things to avoid on the journey.

1000-1050 **Before Help Arrives**

Seaside B *Presenter:* Jim Wilmerding (W1EMT)

Providing initial life saving first aid and care in a medical emergency.

1000-1050 **Ham Radio for the Non-ham**

Seaside C *Presenter:* Everett "Ev" Curry (W6ABM)

You hear them talking...rig, QSO, sun cycle...we have a magic decoder that gives you an idea about what they're talking about! We'll share it with you. Who knows? You might enjoy the ride.

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1100-1150 **DMR Hotspot Setup, Techniques, and Equipment**

Riverside B *Presenter:* David Feldman (W7NCX)

Learn how to setup a DMR hotspot and radio, and get on the air.

1100-1150 **Getting started with HF operating**

Seaside A *Presenter:* Michael Burnette (AF7KB)

If you're just getting started in HF, or you've hesitated to make the leap, get grounded in the basics and the smart choices to make along the way with the best-selling author of the Fast Track series of ham license manuals. In a fast-paced 50 minutes, we'll cover budget considerations, antennas, HF rigs, accessories, and operating procedures for the new and "not yet" HF operator.

1100-1150 **Stop the Bleed!**

Seaside B *Presenter:* Jim Wilmerding (W1EMT)

Hemorrhage Control & Tourniquet Application.

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