

South County ARES



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# South County A R E S Repeaters

By

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South County ARES  
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# Presentation Outline

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- Introduction
- What are the repeater frequencies?
- What is a repeater?
- SCARES repeaters
- Repeater diagram details
- Questions



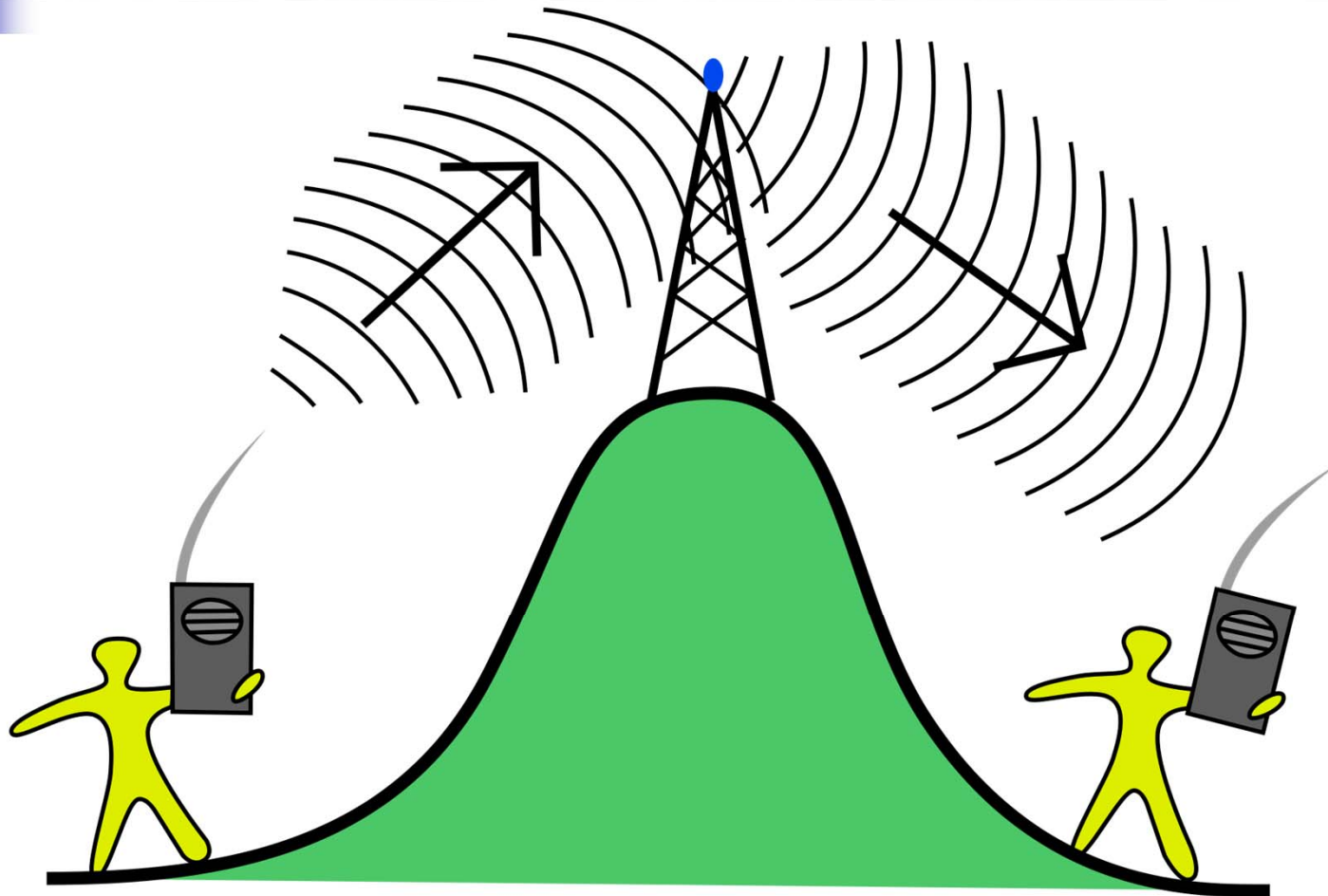
# Introduction

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- Not your ordinary repeater presentation
- Operating through a repeater
- SCARES repeaters
- Understanding elements in a repeater system
- Nuances of SCARES repeaters
- Questions



Repeater:  
Receives on Frequency 1  
Transmits Simultaneously on Frequency 2





# Sources of repeater information

- Club website
- ARRL website
- NARCC website
- Published data
- Your Ham buddy
- Incident Radio Communications Plan (ICS 205)



# What the repeater user needs to know

- Repeater bands (frequencies) set by ARRL and Local Coordination
- Repeater's output frequency
- Repeater's input frequency offset
- CTCSS required to access the repeater?
- Does repeater transmit CTCSS?
- Is it an OPEN repeater?
- Why would a relay listen on the INPUT?
- Why would a relay listen on the output w/o CTCSS?



# NARCC

- Northern Amateur Relay Council of California

5 Records Returned

Frequency = 444.5

Red = UNCOORDINATED Repeater

Blue = Coordination Pending

Black = Coordinated Repeater

Output	Input	CTCSS	Call	Location	Sponsor	Status	Notes	Station Type
444.5000	449.5000	100.0	<a href="#">K6MPN</a>	Redwood City	<a href="#">SCARES</a>	Coordinated	oes	Repeater
444.5000	449.5000	114.8	<a href="#">K6TRK</a>	Stockton	CEVOL	Uncoordinated	ol	Repeater
444.5000	449.5000	103.5	<a href="#">KF6CCP</a>	Chester	KF6CCP	Uncoordinated	oe	Repeater
444.5000	449.5000	141.3	<a href="#">KJ6TYO</a>	Kerman	W6NCB	Coordinated	o	Repeater
444.5000	449.5000	131.8	<a href="#">WB6NIL</a>	Ahwahnee	WB6NIL	Uncoordinated	oaex	Repeater



# Repeater offset on radio

RTL



Receive Frequency 444.5



PTT



Transmit Frequency 449.5 (+5)





# Frequency Bands, Offsets (Northern California)

- Repeater frequencies and offsets (MHz)
- 6 m      -0.5
- 2 m      +/- 0.6
- 1.25 m   -1.6
- 440 m    + 5.0
- Offsets determined by duplexer capabilities



# SCARES repeaters

- Number of SCARES repeaters - 3
- Frequencies
  - 444.5+ MHz PL 100 Hz
  - 53.68- MHz PL 114.8 Hz
- Locations
  - Kaiser Hospital RWC (primary 444.5)
  - RWC PD (aux repeater 444.5)
  - Kings Mountain Fire Station (53.68)



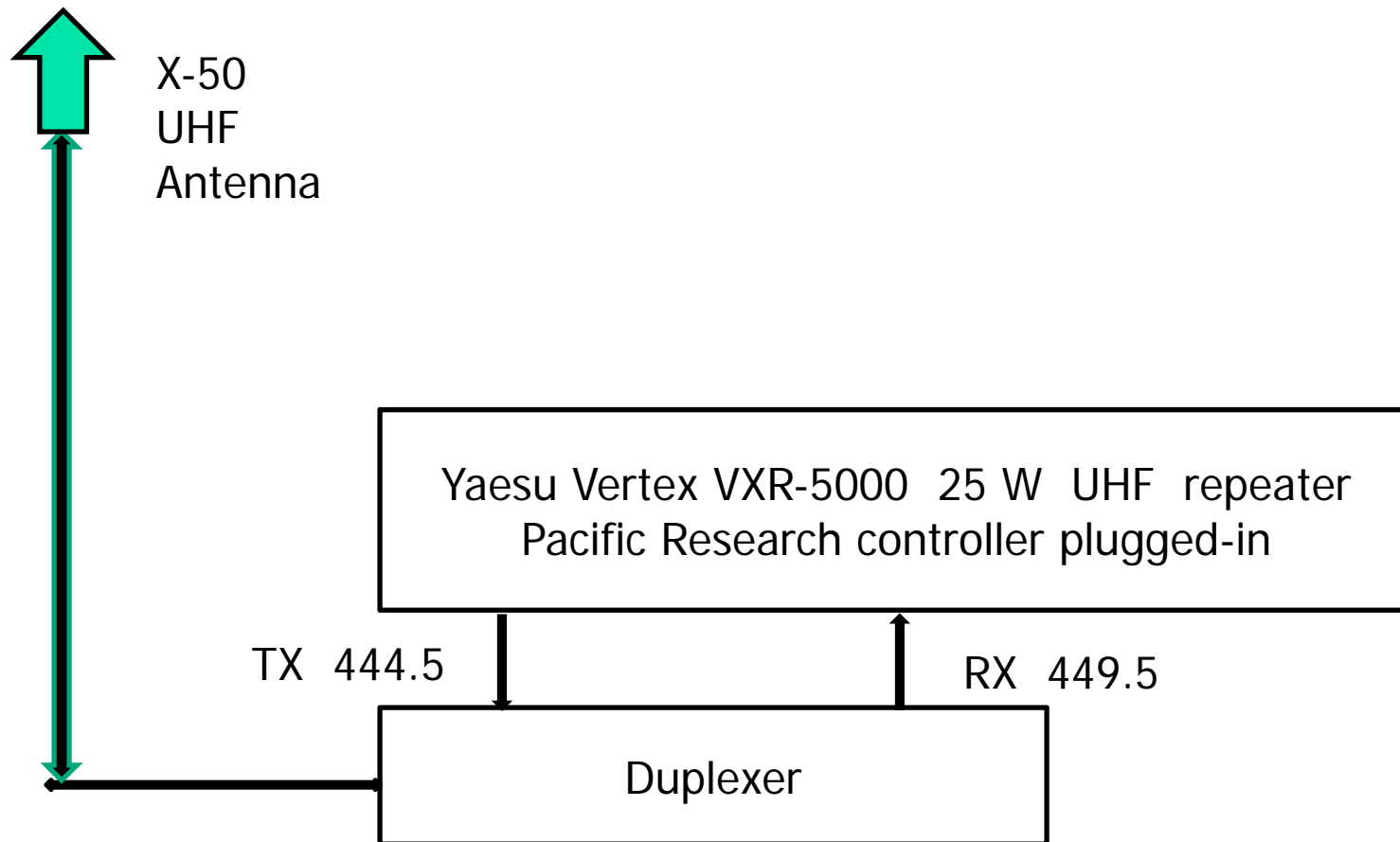
# SCARES auxiliary repeater

- Located in RWCPD Ham radio room
- On "hot standby"
- Battery backup w/trickle charge
- No Remote Base
- Commanded ON if Kaiser repeater is down
- Available as portable ? (not easy)



# What is in a repeater?

## SCARES repeater in RWCPD





# SCARES aux repeater





# SCARES aux repeater





# SCARES 6 m repeater

- GE mobile transceiver configured as a repeater, 53.68- PL 114.8
- Pacific Research Controller
- No remote base
- Battery backed up by KMF
- Utilizes KMF 6m folded dipole antenna
- SCARES 53.68 duplexer

# SCARES 6 meter repeater before KM install

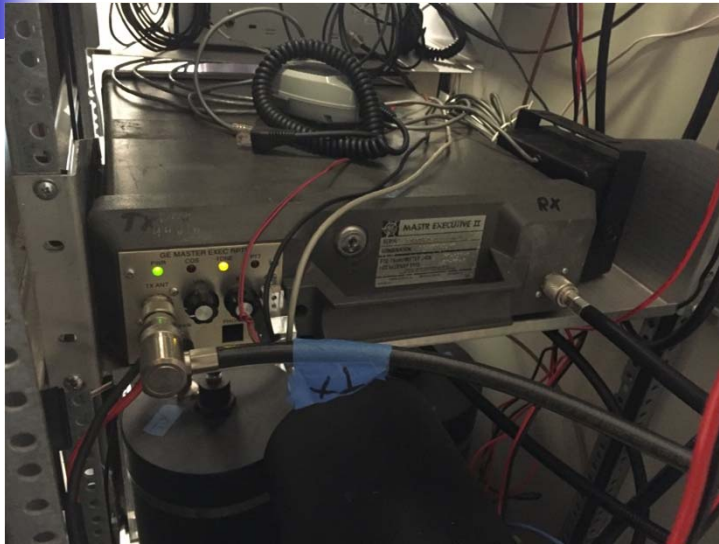
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# 6 meter repeater at KM Fire





# SCARES primary UHF repeater

- Located top of old Kaiser tower in RWC
- 25 W Kenwood UHF repeater with DSP
- 100 Hz CTCSS both TX/RX
- DB-408 dipole antenna configured for maximum gain along peninsula
- Three channel Arcom RC210 controller
- Kenwood 2 meter remote base
- Separate UHF control receiver



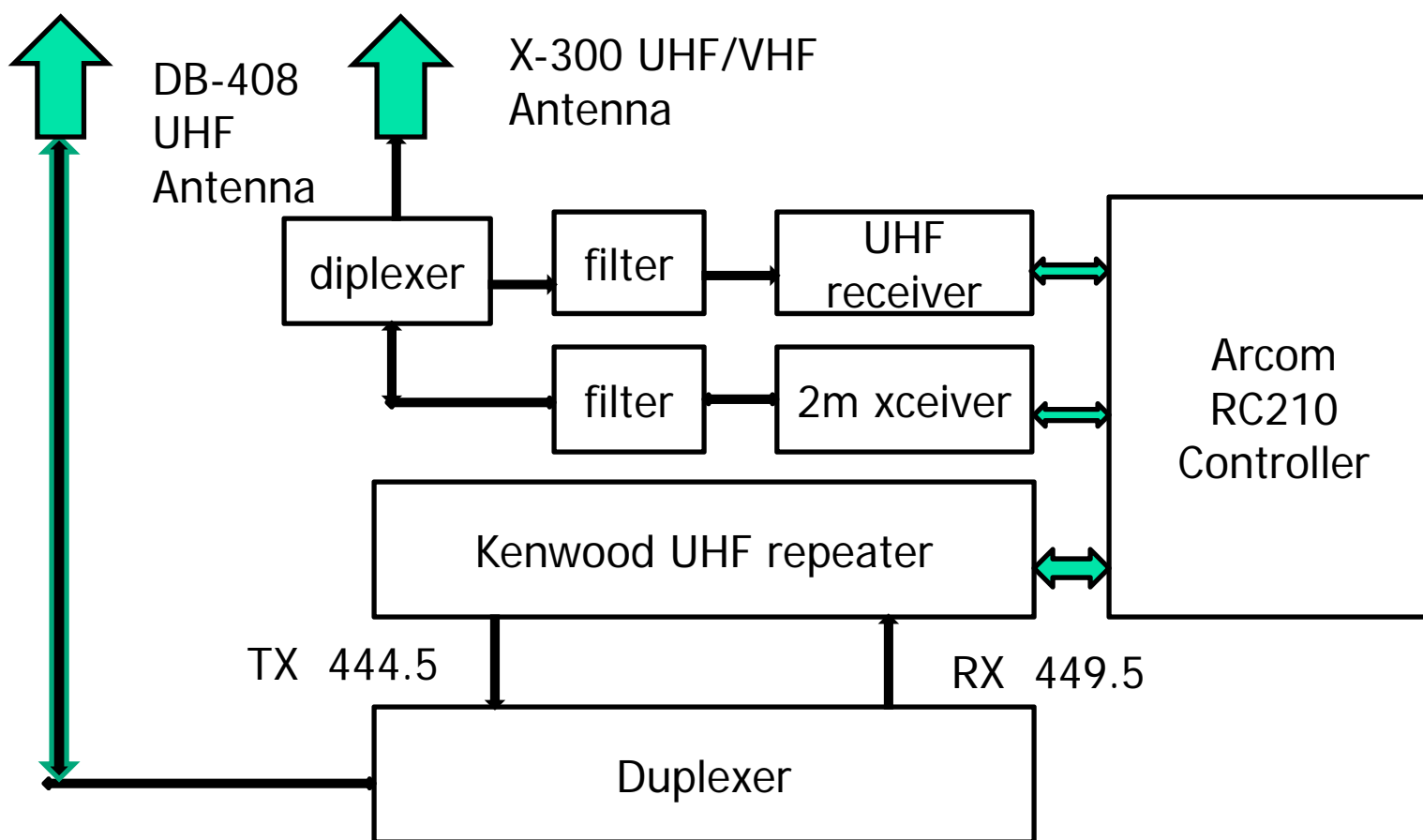
# Kenwood UHF repeater under test





# What is in a repeater?

## SCARES repeater on Kaiser





# SCARES UHF Repeater on Kaiser Hospital RWC

Receives on 449.5 MHz, PL 100 Hz  
Transmits on 444.5 MHz, PL 100 Hz





# DB-408 Antenna on Kaiser





# Repeater Controller (basic)

- Processes audio from the receiver
- Sends processed audio to transmitter
- Keys the transmitter
- Inserts repeater ID (10 minute interval)
- Has watchdog timer (shuts off TX if TX stuck ON)



# Repeater Controller (advanced)

- All of the basic controller features - plus
- RTC (real time clock)
- Scheduler, programmable timers
- Multi-port design (integrates several repeaters)
- Autopatch (telephone interconnect)
- Voice announcements
- Voice/CW IDing
- Monitoring inputs – voltage, current
- Remote programming





# SCARES repeater nuances

- Announces net 5 minutes after the hour on Mondays from 0800 to 1900 hrs.
- Announces general meeting 5 minutes after the hour every third Thursday from 0800 to 1900 hrs.
- Turns ON remote base 1915 hrs every Monday for net and then turns remote base OFF at 2015 hrs. (don't TX 1915)



# SCARES repeater nuances-2

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- 1 minute time-out-timer
- Short hang-time for Remote Base
- Voice ID switches to CW if people are talking on the repeater
- Remote Base is steerable



# SCARES repeaters

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- Questions ??