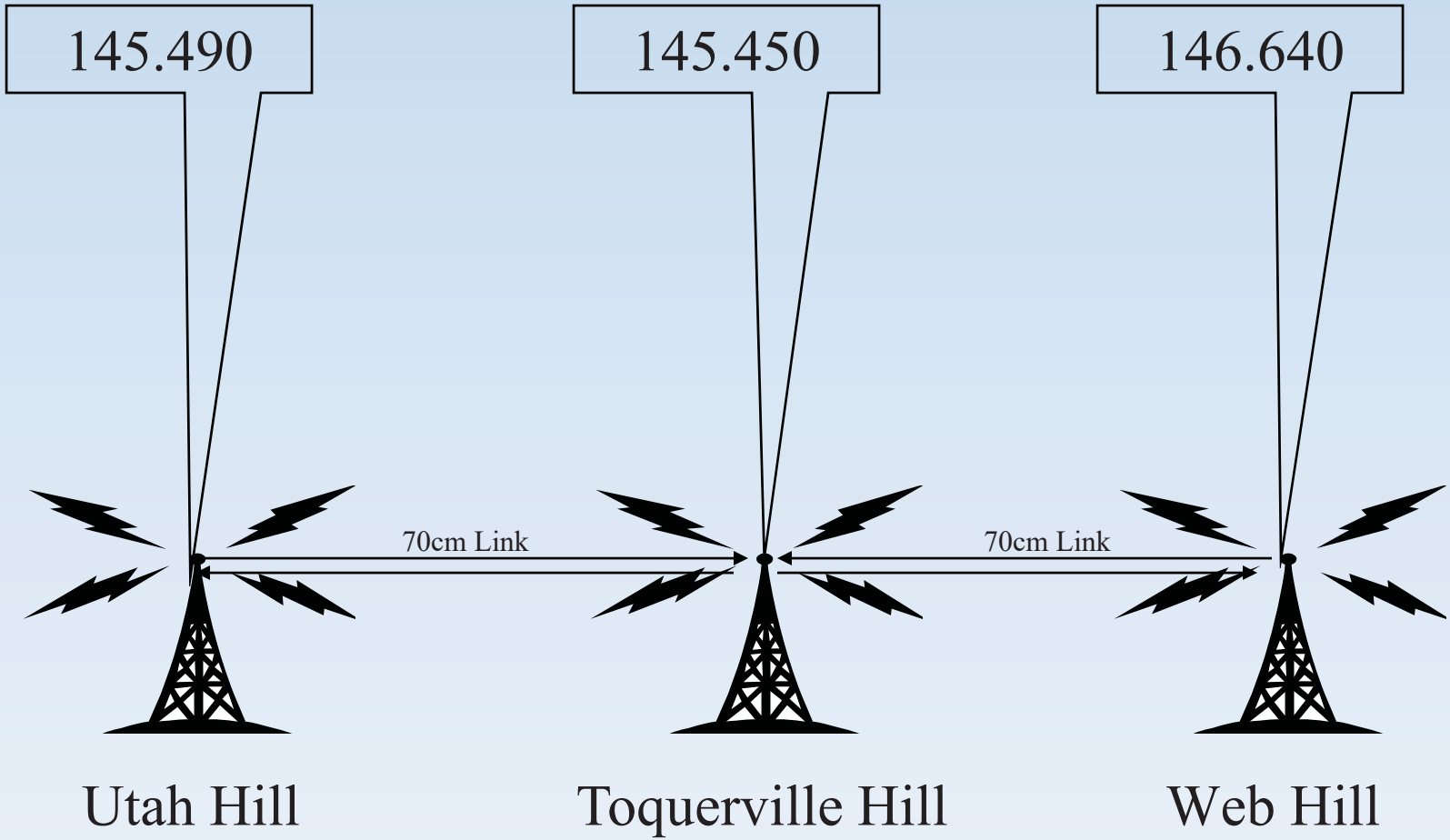
DIXIE AMATEUR RADIO CLUB REPEATER SYSTEM

REVISED APRIL 4, 2020

DARC Repeater System Design Objectives

- Upgrade DARC's repeaters to improve coverage, features, and reliability
- Utilize existing components where possible, procure new components where necessary
- Design for flexibility and ease of maintenance
- Complete installation before inclement weather becomes an issue
- Maintain costs within budget

DARC Repeater Network Configuration



VXR-7000 Repeater

Dual-Purpose Repeater For Efficient Communications

The VXR-7000 not only helps expand the communication range of two-way radio systems, but it also serves as a base station for convenient, easy fleet communications in public safety, industrial or administrative work areas. Continuous-duty and cycle-rated, this one unit is designed to enhance productivity for a maximum return on investment.

Convert To Talk At a Press Of A Button

While a full-featured repeater, the VXR-7000 immediately switches to function in base station mode simply by pressing the Push to Talk Transmit button. Once released, the unit converts back to repeater mode.

Local Or Remote Operating Capability

Controlled by the operator with a press of a button, the VXR-7000 is designed to function as programmed. Or, switch to remote mode and the unit is controlled by instructions received from an external device connected to the accessory connector.

When Safety Counts

The VXR-7000 has DTMF decoding built-in to coordinate with the Emergency and ANI functions found in Vertex Standard mobile and portable two-way radios. If an Emergency alert is received from a mobile or portable radio, the VXR-7000 will beep loudly and blink the LCD to notify the dispatcher of the emergency alert.

Uninterrupted Power Supply

For uninterrupted operation during power failures, a 12 volt rechargeable battery may be connected. During a power outage, the automatic power control circuit will immediately switch the repeater to the backup battery.

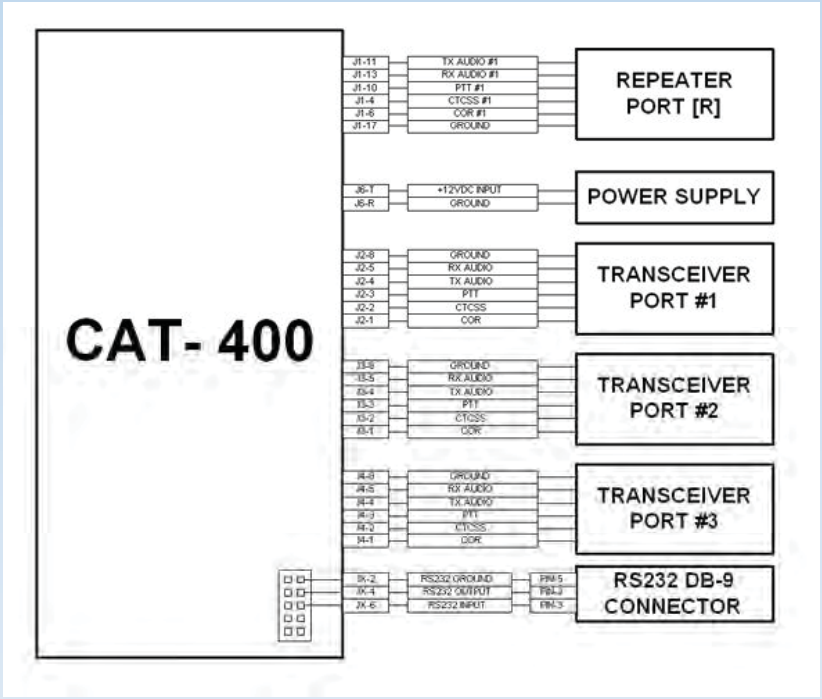
VXR-7000

12.8" (W) X 4.5" (H) X 15.4" (D)

REAR PANEL

1. EXT SP Jack
2. TX Antenna Jack
3. RX Antenna Jack
4. ACC Jack
5. LINE Jack
6. GND Terminal
7. AC Jack
8. BATT Terminal

CAT-400 Controller



Features Include:

- No surface mount components
- All IC's in Hi-Rel sockets
- TI Voice Synthesizer
- Twenty Programmable Voice Messages
- (1) Repeater Port - (3) Remote Base Ports
- (4) DTMF Decoders
- Sixty Four (64) Control Functions
- DTMF Audio Muting
- Internet Firmware Upgrades
- DTMF Pad Test
- Forty (40) User Macros
- Fifty (50) Event Macros
- CW Identifier
- Four (4) Logic Inputs
- Four (4) Output Switches
- Optional Configuration Editor

Alinco DR-435T
70 CM Link Radios

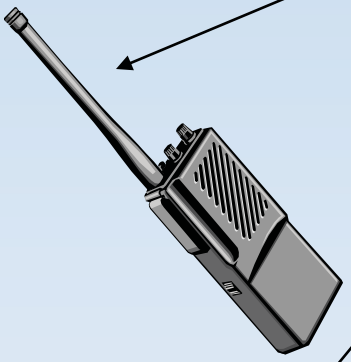
Specifications

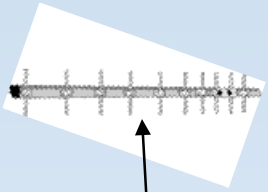
Genaral	
Frequency range	TX: 430.000 - 449.995 MHz RX: 350.000 - 511.995MHz
Operating mode	16K0F3E (FM)/8K50F3E (Narrow-FM)
Frequency resolution	5, 8.33, 10, 12.5, 15, 20, 25, 30, 50 KHz
Memory channel	100 channels + 1 call channel
Ant. impedance	50 ohm unbalanced
Frequency stability	+/- 5 ppm
Microphone impedance	2K ohm
Rated voltage	13.8 VDC +/- 15% (11.7-15.8V)
Current	Transmit: approx. 10.0A Receive: approx. 600mA (Max) 400mA (Squelched)
Operating temperature	-10dig.C to +60dig.C (+14dig.F to +140dig.F)
Ground	Negative ground
Dimensions	142(W) x 40(H) x 174(D) mm 5.58"(W) x 1.57"(H) x 6.83"(D)
Weight	Approx. 1.0Kg (35.3oz)

DARC Repeater Network Sites

Utah Hill
145.490

Transmit on 144.890
Receive on 145.490
CTCSS 100.0hz





To
Toquerville
Hill

Duplexer

VXR-7000 Repeater

DR-435T Link Radio

CAT-400 Controller

Astron RS-7 PS

AC Primary Power

Utah Hill

37° 9’ 18.71317” N 113° 52’ 59.80187” W

Elevation 7684 ft - West Mountain Peak

Utah Hill

37° 9’ 18.71317” N 113° 52’ 59.80187” W

Elevation 7684 ft

Utah Hill

More of the Top of West Mountain

Utah Hill

From the Top Looking Toward Mesquite

Utah Hill

49 & 82 Repeaters Located in Generator Building

Utah Hill

Bill Wells W7WFW Removing Old Repeater

Utah Hill

New Repeater Equipment Cabinet

Utah Hill

Repeater Equipment

Utah Hill

Repeater Duplexer

Utah Hill

Link Antenna

Utah Hill

Antenna Tower

Lloyd Apple K6LGA
At Work on the Tower

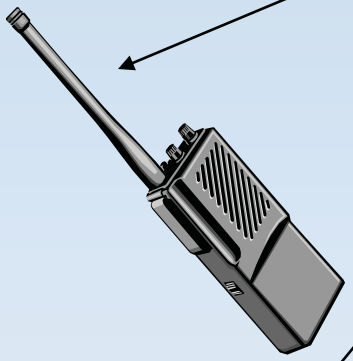
Utah Hill

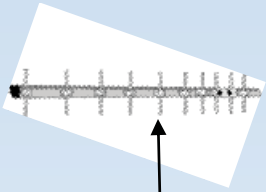
Antenna Tower

Bill Wells W7WFW and
Lloyd Apple K6LGA
ground support for
Casey Lofthouse KD7HUS
as he repairs the coax at the
.49 antenna

Web Hill
146.640

Transmit on 146.040
Receive on 146.640





To
Toquerville
Hill

Duplexer

VXR- 7000 repeater

DR-435T Link radio

CAT-400 Controller

Astron RS-7 PS

AC Primary Power

Web Hill

Repeater Equipment 146.46 Mhz

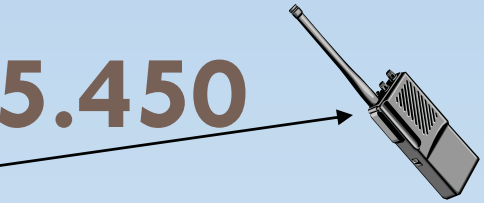
Web Hill

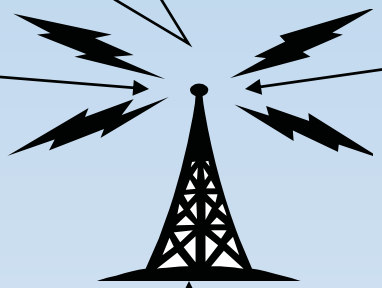
Repeater Equipment

W7WFW, KE7MMH, K6LGA
And KE7DZI at Work on Link
Antenna to Toquerville Hill

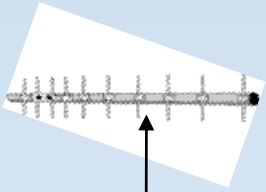
Toquerville Hill
145.450

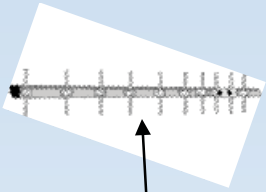
Transmit on 144.850
Receive on 145.450





To
Utah Hill





To
Stout Hill

Duplexer

DR-435T Link Radio

VXR-7000 Repeater

DR-435T Link Radio

CAT-400 Controller

Astron RS-20A PS

AC Primary Power

Toquerville Hill

37°17’ 21.34” N, 113° 16’ 27.98” W

Toquerville Hill

Repeater Site

Toquerville Hill

Looking Toward Utah Hill

Toquerville Hill

37°17’ 21.34” N, 113° 16’ 27.98” W

145.45 Repeater Hardware

Antenna Tower

Toquerville Hill

37°17’ 21.34” N, 113° 16’ 27.98” W

Casey Lofthouse (KD7HUS) Installing
45 Repeater Link Antenna

Casey and Bill Wells (W7WFW)
Installing 45 Repeater Hardware

Repeater Cost/Values*

49 Repeater

VXR-7000 $1300	
CAT-400	$400
PL Decoder	$60
DR-435	$290
Duplexer	$1700*
Power Supply 7A	$70*
Repeater Ant	$700*
Link Ant	$90*
Hardline	$250*
Coax	$100*
Total	$4960

64 Repeater

VXR-7000 $1300	
CAT-400	$400
DR-435	$290
Duplexer	$1700*
Power Supply 7A	$70*
Repeater Ant	$200*
Link Ant	$90*
Coax	$50*
Total	$4100

45 Repeater

VXR-7000 $1300*	
CAT-400	$400
2 DR-435	$580
Duplexer	$1700*
Power Supply 20A	$100*
Repeater Ant	$200*
Link Ant(s)	$180*
Hardline	$250*
Coax	$100*
Total	$4810

Dixie Amateur Radio Club Repeater System

Your DUES and DONATIONS Made This Possible