



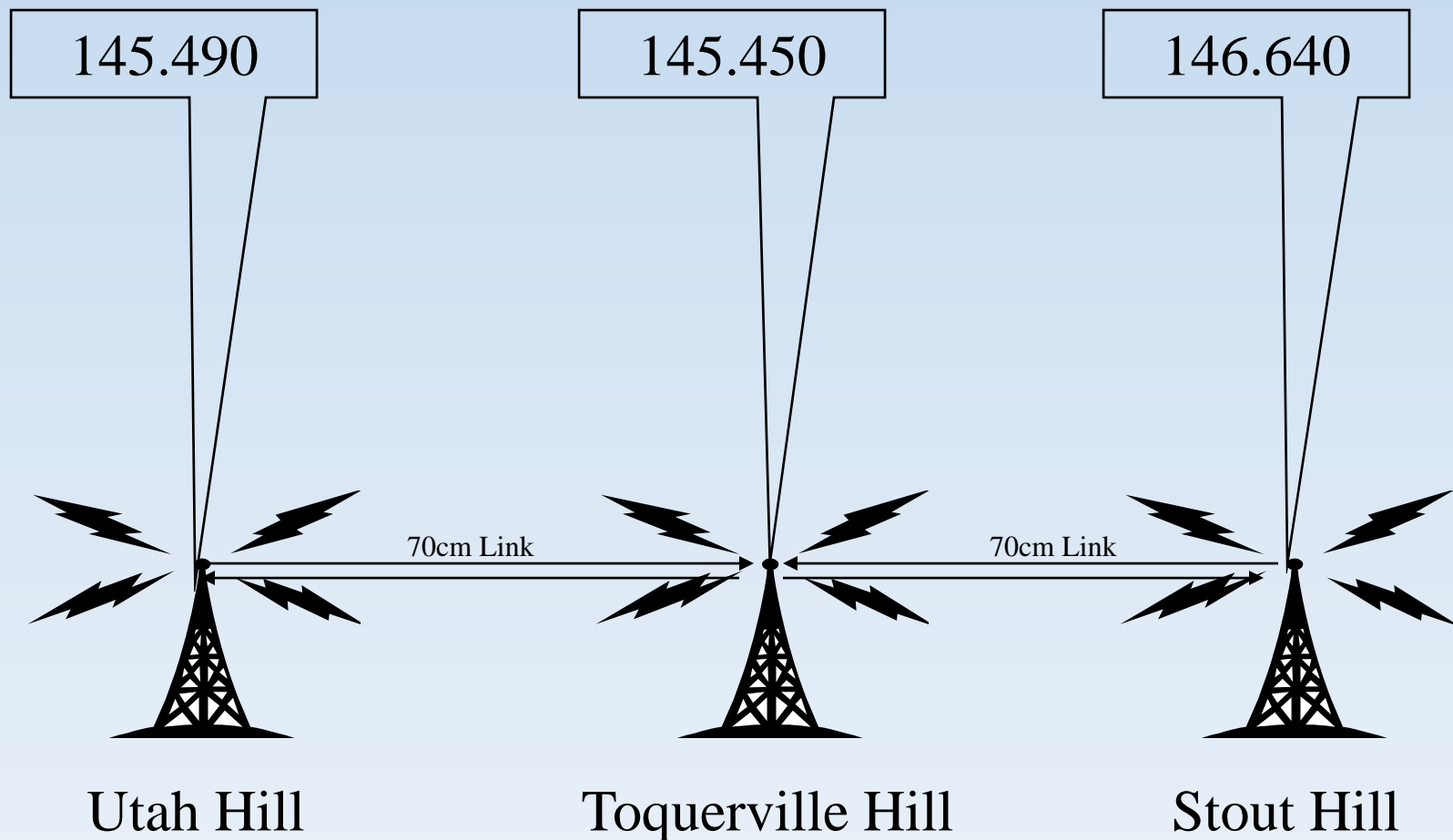
# DIXIE AMATEUR RADIO CLUB REPEATER SYSTEM

OCTOBER 2009

# 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

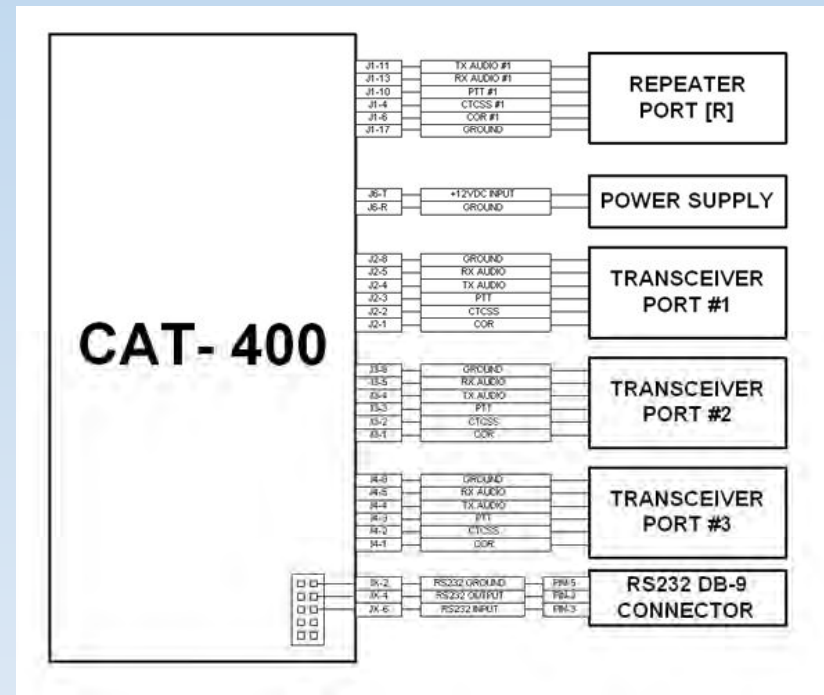
12.8" (W) X 4.5" (H) X 15.4" (D)

REAR PANEL



- |                   |                 |
|-------------------|-----------------|
| ① EXT SP Jack     | ⑤ LINE Jack     |
| ② TX Antenna Jack | ⑥ GND Terminal  |
| ③ RX Antenna Jack | ⑦ AC Jack       |
| ④ ACC 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

#### General

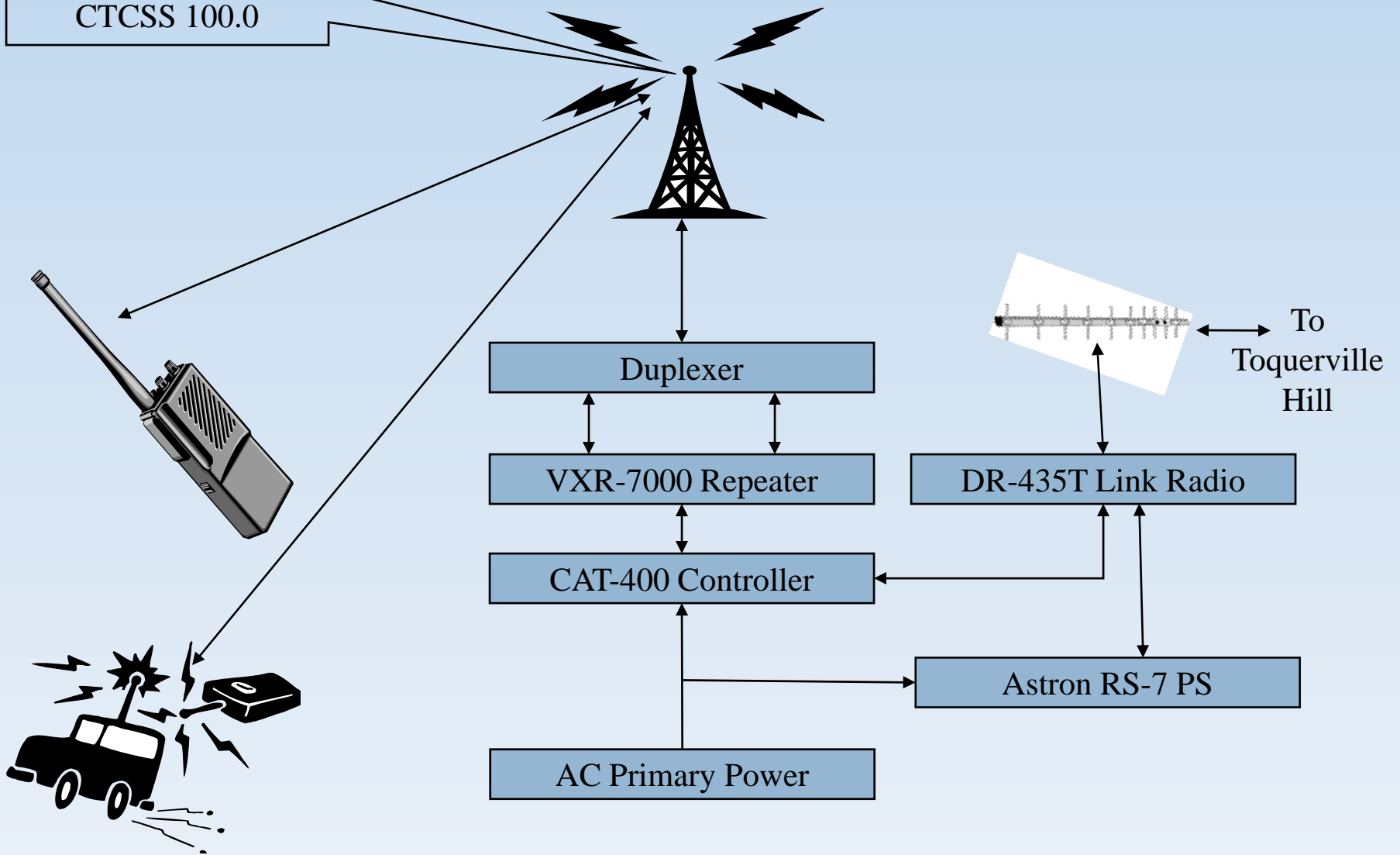
Frequency range	TX: 430.000 - 449.995 MHz RX: 350.000 - 511.995MHz
Operating mode	16K0F3E (FM)/8K50F3E (Narrow-FM)
Frequency resolution	5, 8.33, 10, 12.5, 15, 20, 25, 30, 50 KHz
Memory channel	100 channels + 1 call channel
Ant. impedance	50 ohm unbalanced
Frequency stability	+/- 5 ppm
Microphone impedance	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 145.490  
Receive on 144.890  
CTCSS 100.0



# 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

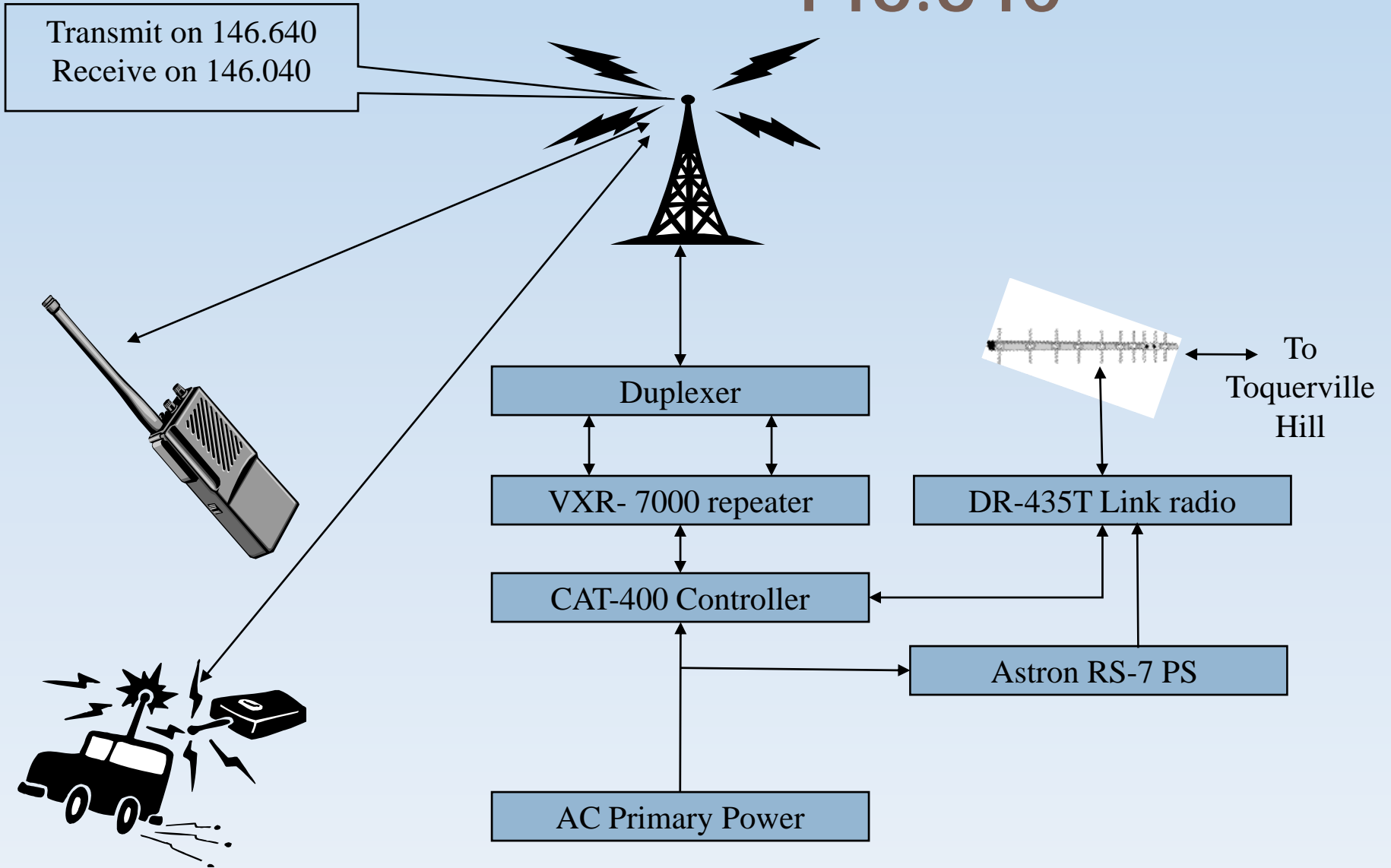
## Antenna Tower



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



# Stout Hill 146.640



# Stout Hill

37° 7' 7.87" N 113° 33' 6.67" W



# Stout Hill

Installing the Link Antennas



# Stout Hill

Repeater Equipment 146.46 Mhz



# Stout Hill

## Repeater Equipment

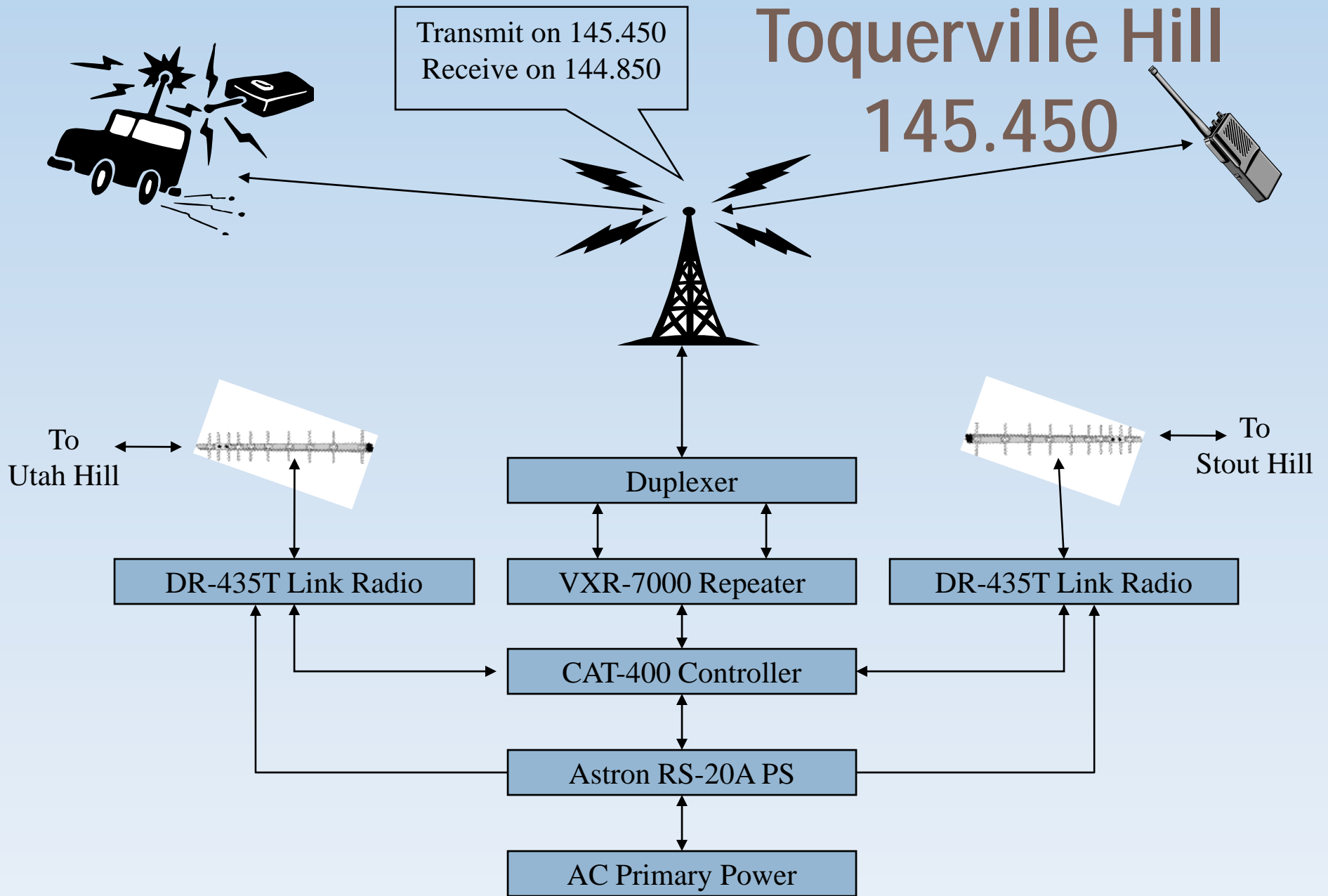


W7WFW, KE7MMH, K6LGA  
And KE7DZI at Work on Link  
Antenna to Toquerville Hill



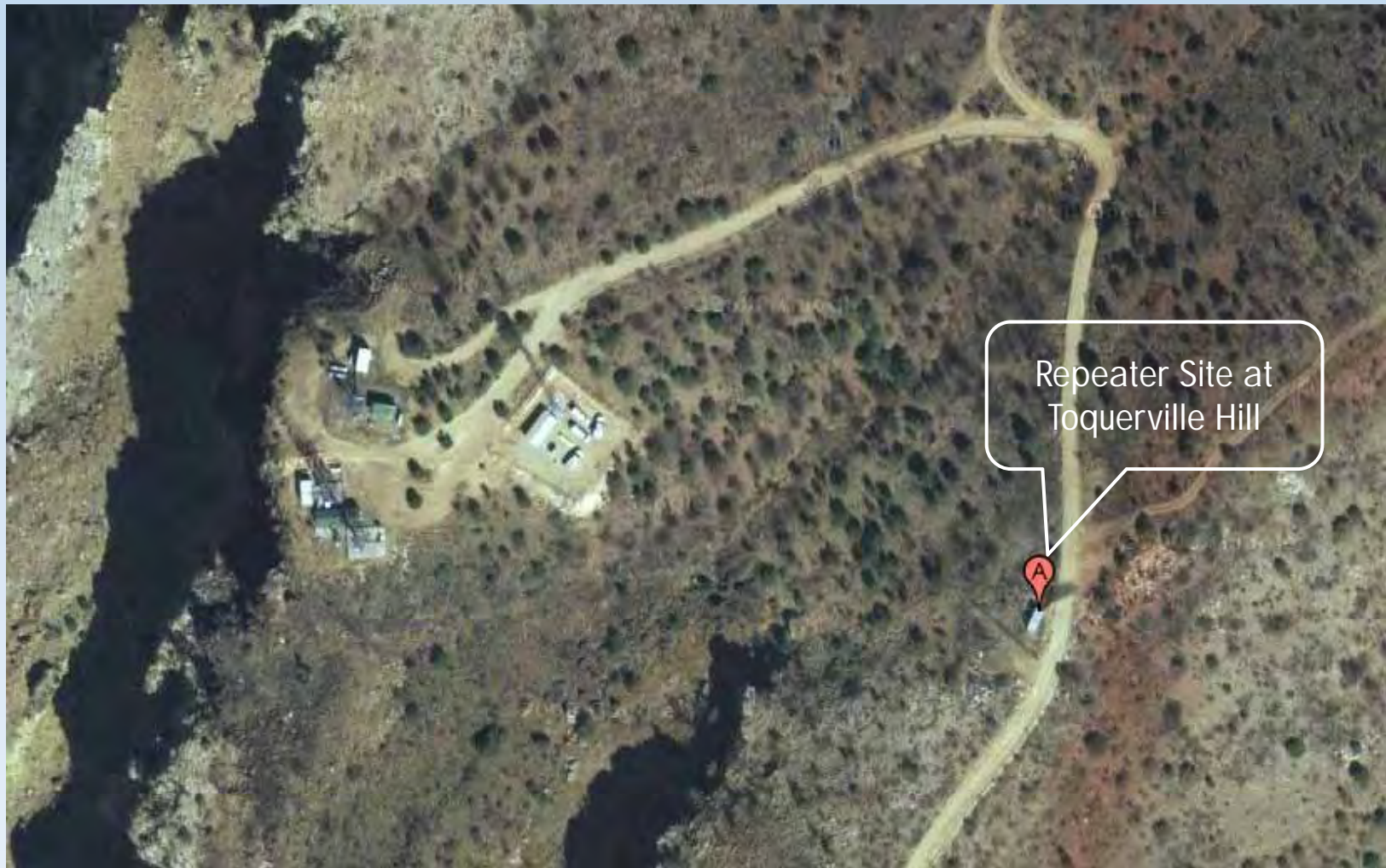
# Toquerville Hill 145.450

Transmit on 145.450  
Receive on 144.850



# 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	<u>\$100*</u>
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	<u>\$50*</u>
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	<u>\$100*</u>
Total	\$4810



# Dixie Amateur Radio Club Repeater System

Your DUES and DONATIONS  
Made This Possible