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Waves

Chattanooga Amateur Radio Club

Special Interest Articles:

- The sabotage led to widespread disruption of phone.
- **D-STAR (Digital Smart Technologies for Amateur Radio)** is a digital voice and data protocol.
- As tornados swept through the southeastern part of the country on April 10.

Individual Highlights:

WHEN VANDALS STRIKE INFRASTRUCTURE, HAMS PROVIDE COMMUNICATIONS SUPPORT

Just after midnight on April 9, someone climbed down four manholes in the San Jose, California area and cut underground fiber optic cables. The sabotage led to widespread disruption of phone service - including tens of thousands of land lines, an undetermined number of cell phones, Internet access and 911 emergency service -in southern Santa Clara County, as well as in Santa Cruz and San Benito counties. San Jose is the county seat of Santa Clara County. With the infrastructure disabled, local Emergency Management officials called on ham radio operators in their communities to provide back-up communications. According to the "San Jose Mercury News," Santa Clara County called a local state of emergency, "but worst-case scenarios were successfully avoided through use of ham radios, door-to-door checks and extra-vigilant patrols" <http://www.mercurynews.com/centralcoast/ci_12121118?nclick_check=1>.

In Santa Cruz County, just over the Santa Cruz Mountains from San Jose, Santa Cruz County District Emergency Coordinator Cap Pennell, KE6AFE, was awoken just after 5 AM on April 9 by uniformed police at his door. Sent by

D-STAR

D-STAR (Digital Smart Technologies for Amateur Radio) is a digital voice and data protocol specification developed as the result of research by the Japan Amateur Radio League to investigate digital technologies for amateur radio. While there are other digital on-air technologies being used by amateurs that have come from other services, D-Star is one of the first on-air standards to be widely deployed and sold by a major radio manufacturer that is designed specifically for amateur service use.

D-Star compatible radios are available on VHF and UHF and microwave amateur radio bands. In addition to the over-the-air protocol, D-Star also provides specifications for network connectivity, enabling D-Star radios to be connected to the Internet or other networks and provisions for routing data streams of voice or packet data via amateur radio callsigns.

The first manufacturer to offer D-Star compatible radios is Icom.

Dominican Hospital President Nanette Mickiewicz, the police officers escorted Pennell to the hospital for a brief on this situation: The fiber optic lines that had been cut in San Jose had affected the Santa Cruz hospital's communications infrastructure, cutting off communications from the hospital to the outside world. Santa Cruz is located on the northern edge of the Monterey Bay, about 70 miles south of San Francisco.

"While I was meeting with hospital department heads, Bob Wolbert, K6XX, had started our ARES Resource Net on the W6WLS/W6MOW linked repeaters," Pennell told the ARRL. "During the briefing, the hospital determined to implement HICS/SEMS for this emergency. There hadn't been telephones or Internet anywhere since about 2:30 AM. The hospital's phone system did work, but only within the hospital. Their internal computer local area network wasn't working either, so they were instantly on a 'paper system.'"

By 6:15, Pennell said they had established tactical radio links on the K6BJ/KI6EH linked repeaters between the Dominican Hospital Emergency Operations Center in Santa Cruz and the Watsonville Community Hospital emergency room; Watsonville is about 15 miles south of Santa Cruz via the Pacific Coast Highway. "We established HEARNET 155.385 simplex between both hospital ERs and County 911; HEARNET is the Hospital Emergency Administrative Radio Network. Once HEARNET (ER staff) and K6BJ repeater (hams) were staffed and operating at both hospitals, I left the hospital to become our initial ham operator at the County Emergency Operations Center and operated as ARES/ACS shift supervisor from there for the rest of the day," Pennell reported.

Throughout the day, Pennell said that hams -- including some in Monterey County who had been working telephones -- helped dispatch ambulances, conferred with the Poison Center on a children's poisoning case, ordered replacement blood supplies for two hospitals from San Jose Red Cross, relayed a complex major "whole hospital" day's food order to the supplier out of county, tracked down various doctors for emergency consultations and shared status updates from our area. "We did all this while in unity with the County government, public safety agencies and California Emergency Management Agency's Coastal Region," he said. "Greg Smith of Cal-EMA <http://www.calema.ca.gov/> spent the day in the Santa Cruz EOC with us." All service was restored by 12:15 AM on Friday, April 10.

NETCOM, the dispatch center for most police and fire agencies in Santa Cruz County, was able to receive 911 calls placed from land lines, but could not receive calls placed from cell phones, said Santa Cruz County Senior Dispatcher Stephanie Zube. "Because the only phone number many land line phone owners could call was 911," she said the center received "countless calls" regarding the blackout: "At least several people attempted to call 911 before driving themselves to the emergency room. A lady in Gilroy fled her home when a robber broke in, and couldn't call 911 before fleeing to a nearby firehouse."

Vandalism Takes Out System

San Jose and San Carlos police are joined in their investigation of the cut fiber optic cables -- now considered by authorities to be a coordinated act of sabotage -- by the Santa Clara County Sheriff's Office and the FBI. The investigation also includes members of AT&T's security force, a handful of trained investigators working for the company. Authorities said on April 10 that evidence collection was complete, but would not elaborate on what exactly what they are examining or whether new security measures are in place to prevent similar acts of destruction.

San Jose police reported receiving about 10 tips concerning the sabotage; San Carlos police told the "Mercury News" that they were examining video surveillance of a major intersection near one of the four locations where AT&T's underground fiber-optic cables were sliced early Thursday morning.

On April 11, AT&T issued a $100,000 reward for information, but bumped up the reward to $250,000 the next day when it discovered that the damage was more serious than originally thought. According

WHEN VANDALS STRIKE INFRASTRUCTURE, HAMS PROVIDE COMMUNICATIONS SUPPORT

to the Daily Tech, some banks in the area were forced to close temporarily, while all service was disabled and hand-written receipts were offered to customers. Many businesses also were forced to either accept cash or close for a few hours, since credit card and ATM transactions were unavailable <http://www.dailytech.com/Vandals+Cut+Phone+Cables+Drop+Service+for+50K+People+911+Services/article14821.htm>.

Authorities say the communications sabotage occurred in two separate incidents, one at 1:30 AM in south San Jose and the other two hours later in San Carlos. Several companies, such as Verizon, "piggy back" on the AT&T-owned cables. AT&T spokesman John Britton told the "Mercury News" <http://www.mercurynews.com/centralcoast/ci_12115324?nclick> that it appears vandals opened a manhole and climbed down at least 8 feet to cut four or five fiber optic cables along Monterey Road just north of the Blossom Hill Road exit. The second vandalism was along Old County Road near Bing Street in San Carlos. San Jose police spokesman Sergeant Ronnie Lopez said the manhole covers are heavy and would take quite an effort to lift, perhaps even requiring a tool. Investigators do not have a suspect yet, he said, but have learned "to expect the unexpected. We have some obvious clues and can assume some things," but a motive remains elusive <http://www.mercurynews.com/valley/ci_12142268>.

Community Leaders Praise Hams

Gilroy, the southernmost city in Santa Clara County, was also affected. City Administrator/Director of Emergency Services Thomas J. Haglund expressed his thanks to the Amateur Radio operators who assisted with communications support, saying, "This particular emergency situation underscores that our reliance on technology should be balanced with maintaining the very types of capabilities that you provided to us. Communication is an obvious key to adequately responding to any emergency and the efforts of the Mutual Aid Communicators and the Gilroy Police VIP's provided the necessary communication and public visibility in this instance and demonstrated just how important your training and skill is to our community. Thank you very much for your dedication and expertise."

Gilroy Police Chief Denise Turner echoed Haglund's comments: "We truly appreciated all of your help during this challenging event! Each of you played a key role in a successful operation. I feel better knowing we have dedicated volunteers like you that will come to our aid in time of need! Thank you!" -- Some information provided by "The San Jose Mercury News" and "The Daily Tech"

HAMS IN SOUTHEASTERN US PROVIDE SPOTTING ASSISTANCE TO NWS

As tornados swept through the southeastern part of the country on April 10, hams in Alabama, Tennessee, Arkansas and Georgia were on the air providing assistance to the National Weather Service (NWS) <http://www.nws.noaa.gov/>.

In Alabama, hams in Madison, Shelby and Calhoun Counties activated SKYWARN Nets. According to Madison County Emergency Coordinator Rolf Goedhart, K4RGG storm spotters in that county were quite active on their Net. "At 12:37, at the request of the Madison County Emergency Operations Center and in response to a tornado watch, we formally activated the Madison County Emergency Net," Goedhart told the ARRL. "For about an hour and a half, there was virtually no dead air, either on the SKYWARN net or the Madison County Emergency Net. In fact, reports were flowing fast enough to make one pause, deciding when or even whether to call NCS with a report." Goedhart said that Hilton, at the Huntsville NWS amateur station, estimated handling more than 200 reports from the northern counties of the state in the nine hours that the Net was open.

In Tennessee, members of the Heart of Tennessee (HOT) ARES <http://www.hotares.com/> started an NWS SKYWARN Net at 12:18 PM as the storms approached. "Amateur operators relayed storm damage information to NWS for

evaluation in determining tornado strength in the area," Rutherford County Emergency Coordinator Keith Miller, N9DGK, told the ARRL. "ARES members were monitoring the developing line of storms as watches and warnings were issued in the adjacent counties in the Middle Tennessee area." Miller said that since primary communications for police departments, fire departments, Emergency Medical Service, County Sheriff or County Emergency Management Agency were not lost, backup communication was not required per the County EMA Director. His ARES group did not receive any requests to staff emergency shelters.

ARRL Georgia Section Emergency Coordinator Gene Clark, W4AYK, told the ARRL that hams in Gwinnett County activated a SKYWARN Net at 4:30 PM on April 10. "According to plan, a de-centralized Net Control function was used, with the Net Manager coordinating weather spotter reports to the NWS office in Peachtree City," he said. "Forty-one amateurs reported seven different reportable weather situations to the NWS."

In Newton County, Emergency Coordinator Charles Davis, WA4UJC, activated a weather Net at 8 PM. Ten operators from different areas of the county, as well as from adjacent counties, participated in the Net, reporting golf ball-sized hail and heavy rain. "When power went out for three hours due to a broken power pole on the west side of the county, the Net continued with hams using mobile transceivers and backup power," Clark explained. "The power outage caused us to lose repeater capabilities, so the hams relied on simplex. Using backup power, they contacted a linked repeater system and maintained communication with the NWS until securing at 11:15 that night."

Arkansas hams were busy with the storm, too. At 7:24 PM CDT, the NWS issued a tornado warning for areas north of the Arkansas town of Mena in Polk County; at 8:01 PM CDT, the warning was extended into Mena. Nine minutes later, an EF-3 tornado struck the city, killing three people.

According to ARRL Arkansas Section Emergency Coordinator John Nordlund, AD5FU, members of the Central Arkansas UHF Group (CAUHF) <http://www.cauhf.org/weather/> provided real-time reports to the National Weather Service office in North Little Rock and to media outlets around the state. "The Group used the AR-Links SKYWARN net and the WarnIM system," Nordlund said. WarnIM is a SKYWARN instant messenger system serving to give those with or without ham radio access, or those who are in remote areas an additional means of communication in times of emergencies or severe weather events. Its features include live chat and access to updated radar data directly from the NWS.

"When the net closed at

D-Star Technical details

D-STAR transfers both voice and data via digital encoding over the 2 m (VHF), 70 cm (UHF), and 23 cm (1.2 GHz) amateur radio bands. There is also an interlinking radio system for creating links between systems in a local area on 10 GHz.

Within the D-Star Digital Voice protocol standards (DV), voice audio is encoded as a 3600 bit/s data stream using proprietary AMBE encoding, with 1200 bit/s FEC, leaving 1200 bit/s for an additional data "path" between radios utilizing DV mode. On air bit rates for DV mode are 4800 bit/s over the 2 m, 70 cm and 23 cm bands.

In addition to DV mode, a high speed Digital Data (DD) mode can be sent at 128 kbit/s only on the 23 cm band. A higher-rate proprietary data protocol, currently believed to be much like ATM, is used in the 10 GHz "link" radios for site-to-site links.

Radios providing DV data service within the low-speed voice protocol variant typically use an RS-232 or USB connection for low speed data (1200 bit/s), while the Icom ID-1 23 cm band radio offers a standard Ethernet connection for high speed (128 kbit/s) connections, to allow easy interfacing with computer equipment.

Chattanooga Amateur Radio Club Meeting April 2, 2009 Red Cross Bld.

Our program started at 7:10 pm. An excellent presentation was given by Tom Wolfe on the National Traffic System.

May's Program will be on D-Star presented by Ben Timmerman

Mark called the meeting to order at 8:45pm
Officers present : Mark Rose, Bill Dobbs, Jim Knight & Susan Miler
Directors present; Tom Cash, Tom Wolfe, Tom Morgan, Ben Timmerman, Susan Miller

The March minutes were approved as written Waves. Motion to accept was made by Bill Dobbs and seconded by Ben Timmerman. All were in favor.

Jim Knight gave the treasurer's report;

Checking account	9,050.15
Hamfest account	9,689.78
P. O. account	135.09
total	18,875.02

72 members have paid their dues, 42 are delinquent
Treasures report was accepted as read.

There was a discussion on whether to have field day by ourselves or join Tennessee DX Association. Decision was made to do it by ourselves.
Lowell Bennington has stepped down as Field Day Chairman, so we need someone to volunteer to do this. The field at Riverpark is already reserved. If you could possibly be Field Day Chairman, please contact Mark Rose as soon as possible.

We have been donated some equipment and have decided to auction the equipment to the highest bidder.(antennas)

Upgrade classes are ongoing at Memorial Hospital on the third Tuesday of each month.

Tom Cash asked about ARRL affiliation for the club being renewed. Jim Knight is doing that.

The meeting was adjourned at 9:15
Next regular club meeting will be Thursday May the 7th at 7:00pm at the Red Cross Bldg. on McCallie Ave.
Next scheduled Board of Directors meeting will be June 21, 2009 . 6:00pm, at Ryan's on Hixson Pike.

Respectfully submitted,
Susan Miller KI4RZJ
Recording Secretary

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w4am.org

the end of the severe weather outbreak, NWS Warning Coordination Meteorologist John Robinson stated on the WarnIM system that the North Little Rock NWS office had never had so much timely storm report information before," Nordlund said.

Nordlund visited Mena on April 11 and noted that the local ham operators are participating in any emergency tasks that are assigned to them -- based on their training and certifications -- and are using simplex ham radio frequencies primarily to avoid additional loading of public safety frequencies as they carry out those assignments. "The damage path [of the tornado] is a striking example of the power of nature," he said. "The recovery effort of community

About Our Organization...

Board of directors

Lowell Bennington, WD4DJW
Susan Miller, KI4RZJ
Ben Timmerman, AC4HG
Tom Wolfe, K4CMY
Tom Morgan, K4VCM
Charlie Curle, AD4F Chairman
Tom Cash, K4ZQX

Officers

Mark Rose KA0YDC	President	423-544-5857	markalanrose@yahoo.com
Bill Dobbs, K4TSF	Vice-President	423-622-5102	K4TSF@arrl.net
Susan Miller, KI4RZJ	Secretary	423-870-4345	wagtimebt@comcast.net
Jim Knight, KD4EHN	Treasurer	423-842-5338	jknight@chattanooga.net

Surplus Ham Gear

Last year a few items relating to amateur radio were donated to the C.A.R.C. with the express condition that any or all could be disposed of as the club sees fit. At the April 16th board meeting, those members present decided to sell off these items. Bids should be emailed to the club secretary, Susan (KI4RZJ), at wagtimebt@comcast.net no later than Tuesday, June 2nd **OR** brought to the June 4th C.A.R.C. meeting. Susan will email the amount of the highest bid to each bidder. Bids will be accepted at this meeting until 8:00 pm and no later. Highest bids will be announced at the June 4th club meeting. The surplus gear is currently stored at Charlie's (AD4F) place in Ooltewah.
Equipment will be sold as is with no warranty and no returns. Arrangements to view equipment should be made with Charlie at 423-344-8447. Buyer is responsible for picking up equipment in Ooltewah.

Item #1: One Butternut six band trap vertical antenna. Some corrosion.

Item #2: One Mosley Classic 33 three element beam. Some corrosion.

Item #3: One Rohn 25 tower consisting of four straight sections and one tapered top section with CDE Ham II rotor system attached. Some surface rust.