

Alachua County ARES 2017 Full Scale Hurricane Communications Exercise

by Gordon Gibby KX4Z NCS521

Saturday, May 6th dawned spring-like crisp and clear, a beautiful morning in Gainesville, Florida, but dark foreboding was in the hearts of many local hams as they raced to get their equipment set up before (simulated) Hurricane ARES arrived at 9 AM. A total of 17 volunteers encompassing the local ARES group, Alachua County Emergency Operating Center, and the Florida Division of Forestry were about to begin the largest known ham radio disaster simulation in the history of Alachua County. For the next four hours, they would simulate two days of hurricane-devastated communications, and attempt to pass every bit of emergency message traffic assigned to them.

Aided by Robert Stewart of the Division of Forestry and his mobile 100-foot radio tower, Asst. Section Manager Jeff Capehart, volunteers Susan Halbert and Gus Clifton hoisted up two VHF antennas and an HF wire antenna, as Asst. EM Jeff Bielling, the Evaluator for that center, observed. Similar hurried antenna work was going on simultaneously at two Hurricane Shelters (the Senior Center: John Troupe MD, and Rosemary Jones; Easton-Newberry Sport Center: Vann Chesney, Barry Nason with Larry Rovak) and setup was also in full swing at the local Red Cross with Chris Carr, Cheryl Carr, Art &



Ham radio volunteers at the Sr. Center hurricane shelter

Cindy Grant. Local GARS club President Pete Winters and his wife were Evaluators at the Senior Center, Jeff Bielling at the EOC, Larry Rovak in Newberry, and the Winters at the Senior Center.



Forestry Mobile Tower (retracted), generator & operator room

& power, switched to radio-only mode, using solar-powered backup battery operation – and promptly crashed! A buggy RMS_RELAY software version was frantically replaced and the system brought back up just in time for the Exercise --- the goal of which was to thoroughly test all our assets, skills and strategies, and local weak points. We were finding them....

All of the groups were dealing with unfamiliar ICS sign-in & communications log forms, and written evaluation forms, as they checked into the pre-hurricane simulation net between 0830 and 0900, then filed ICS-213 status reports by radio email to the mock State EOC. Earlier that morning, the local WINLINK hybrid gateway had “lost” internet

At 0900, spread out between four locations nearly spanning the county, each group opened sealed envelopes to discover what the simulated Hurricane had wreaked on their location, and their message tasks for the next hour. USB flash drives, as well as paper hardcopy gave the bad news: all voice repeaters in the county had been knocked out, and there were nearly two dozen messages to be communicated in the next hour alone, using any mode or skill they possessed. *“Losing the repeaters hit us pretty hard,”* commented one volunteer as groups struggled to regain communications with outlying Shelters using a pre-positioned Simplex Repeater – and discovered it didn't reach two of the centers.

It was quite eerie not to hear **at all** from another center, and have *no way to know their situation....* exactly as in a real communications emergency. Soon, every hour began with a check-in to see who could still be reached.



Illustration 1: Pine trees and other tall objects pressed into service to hoist all manner of antennas

Alachua County presents real problems for VHF simplex communications, with central sites at 190 feet mean sea level, but the EOC a full 60 feet lower, and the far distant western hurricane shelters 90 feet lower. Signals from a 50 foot tower at the EOC are 10 feet underground at the Senior Center... impossible to reach western edge of the county.

Volunteers slowly regained their footing and by 0930 were beginning to transmit Tactical Messages over simplex voice, while ICS-213's began to flow over packet digital networks (7 digital repeater assets now in our county) toward the HF WINLINK Gateway on the west side of town for HF forwarding out of the (simulated) stricken city with non-working/overwhelmed Internet and telephone service. Volunteers at the Red Cross were stuck with a configuration issue and couldn't get their digital system to work. HF was being utilized at the two farthest centers to get WINLINK messages out. HF from the EOC seemed to have zero output, yet an evaluator easily reached the local WINLINK gateway on 80 meters; more issues! The EOC received a portion of a (simulated) message that half of a huge local hospital had to be evacuated and begging for communications help – and was *unable to respond with a mobile comms team*, due to a lack of sufficient volunteers. An entire branch of the simulation went down in flames! Additional unexpected requests for help came in from co-simulating Marion County hams, over WINLINK. Copious pre-simulation planning included standardizing ways for adjacent counties to reach each other through multiple redundant techniques, that will be utilized in real situations also. The Participant Workbook ran past 25 pages.

At 1000, another round of envelopes, as the simulation progressed to Day 2. Power outages were dealt with using battery and generator backup at some of the sites; message traffic improved as volunteers found more work-arounds using skills trained on for the previous nine months. At the 1100 round of envelopes, one repeater was declared “working again”, much to the relief of the groups, and the farthest center was again in voice contact where previously it had only been radio email. Over voice, direct packet keyboard to keyboard was arranged and error-free record traffic was easily exchanged using the YAPP protocol.

By 1230 the group was pretty exhausted, the simulation concluded and everyone convened for lunch and 90 minutes of excited reviews of what worked, where problems were found, and how they might be addressed before a **real** disaster scenario. A total of 53 messages --- well beyond the wildest dreams of the simulation designers – had been communicatedⁱ, though there were problems with the accuracy & timing of some of the transfers. When all the comment sheets and evaluations were analyzed, over 30 “issues” were cataloged on the group's web page and work began on another round of addressing each area of difficulty as this group marches toward real mastery of their craft.

Page after page of evaluations/comments were submitted. The findings included: setup took far longer than expected for most groups; simplex repeater sensitivity needs improvement; digital skills need more practice; message passing skills need more practice; a ladder & antenna analyzer were needed at one location; difficulties with interference on 40 meters; confusion over assigned call signs & frequencies (unexpected change callsigns from published ICS-205 made radio email flounder) ; insufficient transmission line at one facility; interpersonal problems due to stress; antenna shadowing by a metal building at one site; and a disconcerting lack of quick acknowledgment to WINLINK messages.

BY THE NUMBERS

Simulation ARES participation	15 volunteers	55% of Alachua County ARES
Additional participants	2	County, state officials
Total messages transacted	53	Includes by any means at with any delay
Modalities utilized:	Voice; WINLINK HF & VHF; Packet YAPP	
“Issues” identified	>30	
Voice Proficiency Score (avg)	9.4	1-10 scale, judged “encouragingly”
Digital Proficiency Score (avg)	7.8	1-10 scale, judged “encouragingly”
Messages documented as transacted on time	27	
Volunteer time during test	85	Man-hours
Estimated training time during previous 9 months.	>>300	Man-hours; 12 mtgs, 2 solder sessions, > 10 antennas
Estimated simulation	40	Man-hours

ⁱ A further updated version of RMS_RELAY unlogged an HF forwarding queue that got stuck 2-3 hours into the exercise.

development time		
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Alachua County has never participated in such a wide-ranging and detailed full scale simulation before—Dave Welker of the Marion County Hospital Emergency Communications group challenged us to create a NIMS-compatible exercise and this was the result! Despite all the issues discovered, our performance was good, and the group was enthusiastic about their achievement and looking forward to the next adventure.

*A compendium of documentation of the exercise, sufficient to allow alteration or replication by other ARES groups, can be found at:
<http://qsl.net/nf4rc/hurricanetestplan.pdf>*