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GOOD STORY

The Eagles Wings Foundation's Pathfinders Task Force Mobile Technology for Conducting Damage and Human Needs Assessments

SUMMARY

The Eagles Wings Foundation's volunteer Pathfinders Task Force (PTF) uses a mobile, geocoded technology that uses military specification cell phones to conduct rapid damage and human needs assessments in disaster environments.

BACKGROUND

The Eagles Wings Foundation is a Florida-based, non-profit, multi-faith organization that utilizes credentialed volunteers to organize unaffiliated, local volunteers to conduct disaster relief work. The foundation began in 1999 with a mission to coordinate volunteers and donations in the Bahamas after Hurricane Floyd. The Eagles Wings Foundation is a member of Florida Volunteer Organizations Active in Disasters and works under the State of Florida's Emergency Support Function (ESF)-15 (volunteers and donations) officer as part of the State Emergency Response Team (SERT) with a focus on mass care operations.

Hurricane Floyd made landfall in the Bahamas as a borderline Category 3/4 on September 14, 1999, before continuing along the southeast US coast. The storm caused 57 deaths and over \$4.5 billion in damages in the US and Caribbean.

PTF is the Eagles Wings' pilot volunteer management team. PTF helps emergency operations centers (EOC) seek out and address the unmet needs of the homebound population after a disaster. Eagles Wings and PTF partner with volunteer organizations such as Citizen Corps, Volunteers in Policing, Community Emergency Response Teams (CERT), Teen CERT, Medical Reserve Corps, Fire Corps, 4-H, United Way, and the American Red Cross. PTF also has memorandums of understanding (MOU) with 14 national non-profit organizations and with 58 Florida Christian churches. The Eagles Wings board of directors is comprised of members from five Christian faiths as well as the Jewish and Islamic faiths. To maintain a broad outreach mission, PTF requires its members to sign a non-proselytizing agreement prior to deployment.

Following Hurricane Katrina, PTF worked with the Harrison County, Mississippi, EOC to assess the needs of homebound survivors and to staff 20 points of distribution and a logistics staging area. Under a unified command, PTF personnel went door-to-door to check for any urgent unmet needs and to deliver food and water to survivors. PTF volunteer crews of 5 – 7 people proceeded down streets based upon predetermined grid search patterns in the Gulfport and Biloxi areas. The hurricane disrupted cell phone and Internet service, forcing volunteers to work without the use of normal communications infrastructure. PTF

Harrison County, located on the southern coast of Mississippi, had a population of approximately 190,000 in 2005. Hurricane Katrina caused 97 deaths in the county and destroyed or severely damaged 35,000 homes.

documented urgent medical needs by hand and gave paper records to medical crews for follow-up action. PTF crews delivered relief supplies to 126,000 homebound survivors in 14 days and collected information on approximately 7,400 unmet needs. However, the Harrison County EOC found the large volume of paper documentation unwieldy and difficult to process. The Eagles Wings Foundation recognized the need for electronic documentation in future surveys and began exploring technology options after the Hurricane Katrina response.

GOALS

To conduct damage and human needs assessment surveys that are mobile, geocoded, and time-stamped, PTF uses military specification mobile phones. The phones track each household visit, document survivor and household needs, and log contact information electronically so that it can be downloaded for later analysis.

DESCRIPTION

The Eagles Wings Foundation worked on the development of a mobile technology to conduct damage and human needs assessments. The foundation has used exercises and actual incidents to refine its PTF concept and deployment model. PTF is developing an advanced training course for jurisdictions to establish a similar locally available corps of volunteers who can use the new technology.

Technological Development

The Eagles Wings Foundation began development of the technology in the spring of 2006 and worked with a number of partners. Eagles Wings needed technology that was able to function in disaster conditions, including during the absence of cell phone and Internet service. The technology also had to be simple to use, affordable, and easy to learn in order to facilitate rapid mobilization of volunteers.

Eagles Wings worked with a programming software company for 8 months to develop a replicable, automated, disaster relief software system. The resulting Java-based system has a geocoded, time stamp using global positioning system (GPS) data, which can color-code rapid damage assessments at the PTF base according to the level of damage.

The Eagles Wings Foundation's information technology staff loaded the Pathfinders software on to simple flip cell phones. Eagles Wings chose to use military specification flip phones over mobile computers and personal digital assistants because they were cheaper, simpler to use, and better able to withstand the rugged conditions of a disaster environment.

PTF Concept and Deployment

The Eagles Wings Foundation structured its PTF in accordance with National Incident Management System (NIMS) guidelines. PTF operates under a strict chain of command that reports and delivers an incident action plan to the local EOC. PTF typically acts as a deputy to the local EOC's ESF-15 or ESF-6 (mass care). The PTF incident command has its own operations, finance, logistics, and planning sections. All volunteers, including unaffiliated or spontaneous volunteers, undergo a criminal background check and training and are covered



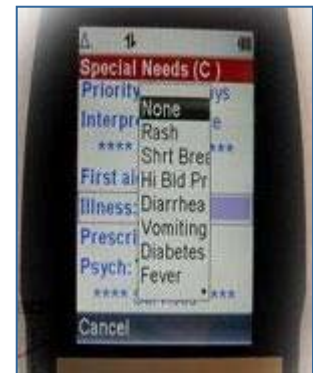
A PTF Operations Briefing

by an accident insurance program. PTF recruits, registers, trains, types, and tracks the hours of volunteers to document volunteer contributions of time and effort for Federal Emergency Management Agency (FEMA) credit, which the local jurisdiction can then use to offset their required local effort payments to FEMA.

To request a PTF, a jurisdiction can establish a standby, no cost MOU, or the team can be requested via the Emergency Management Assistance Compact (EMAC) as administered by the National Emergency Management Association. The state or local EOC incurs no net costs under a declared disaster if the task force is requested by a local EOC or a state emergency management regional coordinator and tasked by ESF-15 or ESF-6 at the state EOC. If the jurisdiction is in Florida, the local agency administrator must sign a mission assignment; if the jurisdiction is outside of Florida, then the jurisdiction must initiate an EMAC request to task the PTF.

How PTFs Employ Technology

Eagles Wings first developed survivor survey questions in 2008 in collaboration with FEMA's national disability coordinator, the American Red Cross Safe and Well program, the Florida Department of Family and Children Services, and other cooperating agencies. The software prompts users to enter information in drop-down checklists and in text-message entry comment spaces. Users capture and store data on the mobile phones and can download the information onto a main database at command headquarters using Bluetooth technology. The phones can store the information from approximately 700 household surveys before requiring a data transfer. The geocoded, time-stamped data allows for the immediate dispatch of follow-up crews if necessary. Survey information can also be uploaded onto available Web-based servers. Relatives in other parts of the country can access information about a survivor's well-being via the Eagles Wings Foundation's MOU with the American Red Cross Safe and Well website.



A sample PTF special needs survey

PTF Refinement

Since its initial development, PTF has used exercises and actual incidents to refine the technology and volunteer task force model.

Testing the Software and Training

The Eagles Wings Foundation initially tested the PTF software in three full-scale exercises with field-training sessions for volunteers. In the Florida Statewide Hurricane Exercise in June 2008, Eagles Wings deployed 101 first-time volunteers from 7 states. These volunteers, aged 13 – 85, required only an average of 1 hour of training on survey procedures and mobile phone use. Volunteers went to different households and entered survey information, covering approximately 1,000 people per hour in door-to-door field collections. Eagles Wings participated in two additional exercises in August 2008 in Hillsborough County, FL. Over 100 volunteers participated in each exercise and surveyed 1,200 and 1,700 homes per hour. After these exercises, Eagles Wings simplified the technology training course to expedite task force mobilization.

Hurricane Ike

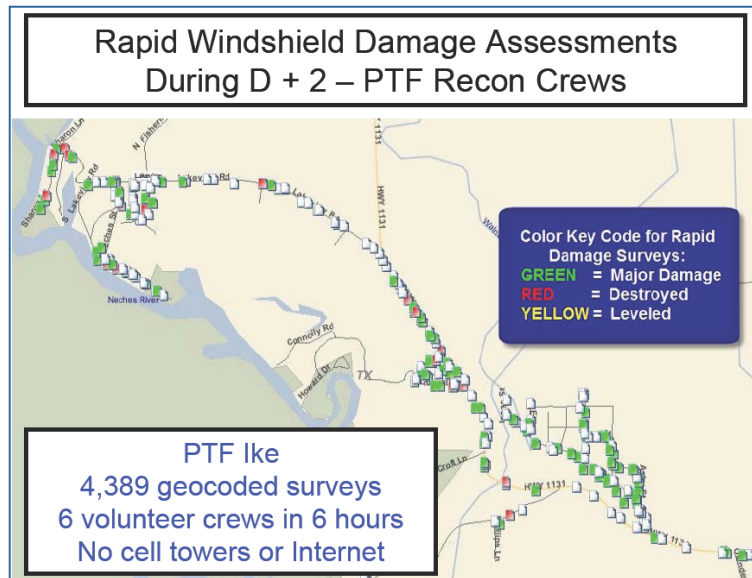
During the 2008 Hurricane Ike response in Orange County, TX, a Texas Division of Emergency Management regional liaison officer requested support from PTF to analyze needs and establish a deployment model to reach homebound survivors in the county. The PTF mission included conducting rapid damage assessment surveys and collecting data on

survivor welfare and unmet special needs. PTF also dispatched special needs crews to address or resolve identified unmet needs. PTF trained, briefed, and dispatched 662 volunteers during the response. Many of the volunteers were recruited from the spontaneous homebound survivors willing to be trained and to assist PTF in its mission to uncover the unmet needs. Door-to-door operations lasted from September 15 to 21, 2008.

Volunteers completed and submitted 6,179 electronic rapid damage survey reports to the Orange County EOC. In its first day of operation, PTF dispatched 6 crews that collected 4,389 color-coded, damage assessments in 6 hours. The task force also reached 5,232 survivors and uncovered 249 unmet special needs, 77 of which were immediate special needs identified by special needs crews. An emergency medical technician and/or a physician's assistant followed up with 75 of these survivors within 24 hours of being located. PTF relied upon local CERT volunteers to help coordinate home delivery of immediate pharmaceutical needs. Thus, PTF uncovered the needs, diagnosed them at their homes, and coordinated delivery of the needed relief without adding to the burden of local emergency services.

Hurricane Ike made landfall as a Category 2 storm near Galveston Island, Texas, on September 13, 2008. The storm caused up to 18 inches of flooding in Texas and maximum storm surges over 10 feet on the Texas coast. Hurricane Ike caused 20 deaths and \$19.3 billion in damage.

The portability and adaptability of the software contributed to the success of the PTF Hurricane Ike response. Since Hurricane Ike disrupted cell phone and Internet service in the area, PTF initially established its own Internet system using three cabinet-sized servers that cost \$10,000 each. However, on the second day of operations, the information technology team shifted the server software onto a single laptop with a second backup laptop for redundancy. This made the command headquarters technology mobile in addition to the mobile phone survey instruments. Command headquarters was also able to modify the phone surveys in minutes to adapt to local needs. During the Hurricane Ike response, an emergency management coordinator asked the PTF to create a version of the survey in Spanish, citing a need for a translation due to the local demographics. A translator quickly created another survey version on the laptop server and automatically updated the 100 phones in less than 15 minutes.



A color-coded data collection screenshot of Hurricane Ike damage assessment surveys

Tropical Storm Fay

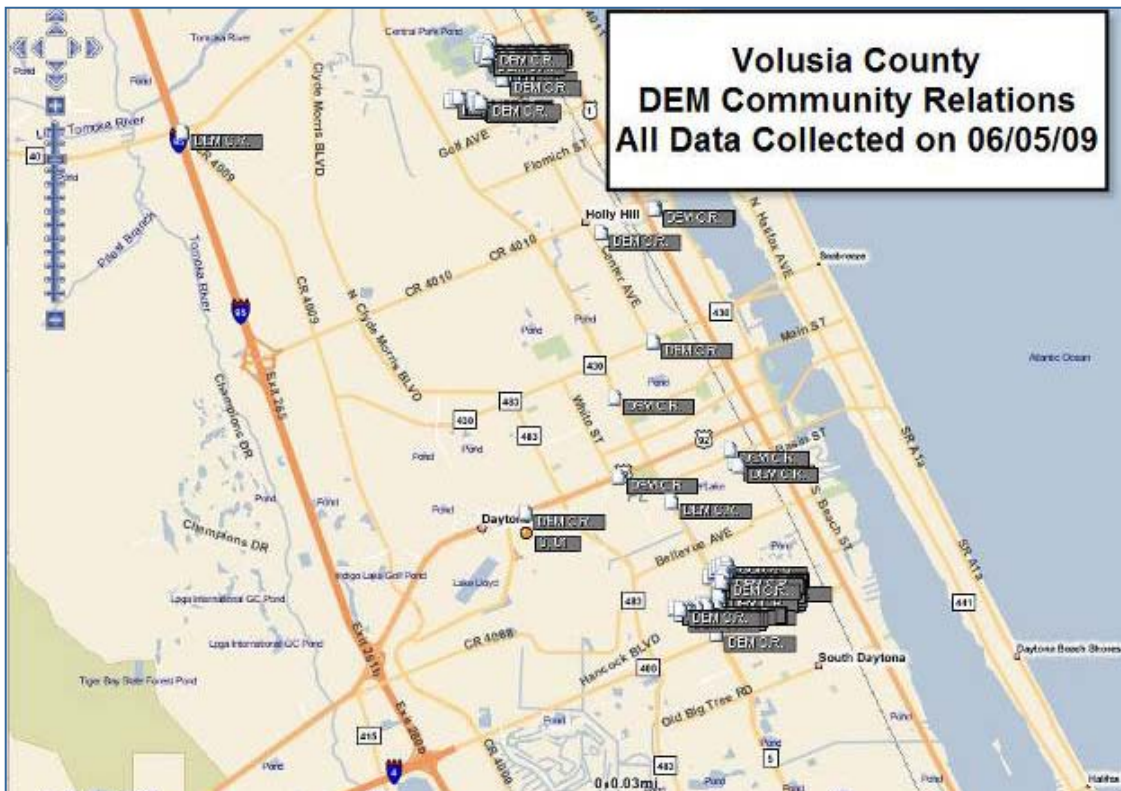
The Orlando, FL, Joint Field Office (JFO) established for Tropical Storm Fay needed to conduct damage assessments of lift pump stations in Collier County, FL. The JFO had received inconsistent data from previous state and FEMA preliminary damage assessments. Duplicated field reports and missing GPS data points frustrated earlier JFO data collection

efforts. Subsequently, the federal coordinating officer and deputy state coordinating officer authorized a field deployment of the PTF for the collection of lift station locations and data in Collier County and Everglades City.

The PTF liaison team delivered a rapid training with its field equipment to the Orlando JFO and its Florida Division of Emergency Management (DEM) SERT staff. JFO staff customized the standardized FEMA Public Assistance (PA) assessment surveys with county-specific questions within minutes. Then, the SERT staff members were able to quickly deploy and generate Excel spreadsheets of survey results, to sort the data, and to send electronic copies to the appropriate agency for follow up action. A Florida SERT reservist noted in an after-action report that the Pathfinders system was a marked improvement in efficiency, portability, analysis, and documentation from previous survey efforts.

Florida's Presidentially Declared Flood Events

The success of the Tropical Storm Fay deployment led to further use of Pathfinders software in Florida during responses to the Panhandle and Daytona floods in 2009 (FEMA-1831-DR and FEMA-1840-DR, respectively). PTF verified the simplicity of its software capability when Florida SERT reservists successfully utilized the technology without any PTF members present. PTF shipped 15 phones overnight and was able to train field staff members over the phone and to provide remote tech support during the Memorial Day holiday. SERT team door-to-door missions resulted in over 3,500 geocoded and time-date stamped data forms for the Individual Assistance (IA) program. Another Florida SERT team used PTF custom PA survey forms in Clay and Putnam counties along the east coast of Florida.



A data collection screenshot from the FEMA-1840-DR in Volusia County, FL. Florida DEM personnel could view individual survey entries by clicking on each document icon.

Florida 2009 Statewide Hurricane Exercise

Five Florida counties requested PTF liaison team participation during the June 2009 statewide hurricane exercise. The scenario involved a Category 5 hurricane that left over 4 million people homeless and required a large-scale response. More than 100 local Citizen Corps volunteers completed rapid damage assessments and searched for homebound vulnerable populations with unmet needs over a 2-day period.

In its continuing effort to improve its operations, PTF worked in conjunction with the Florida DEM IA program to formulate a faster rapid damage assessment model. Since the scenario involved over 4 million people left homeless after the initial landfall, PTF wanted to improve the earlier survey rates of 1,000 per hour. With a new format designed for catastrophic incidents, PTF documented over 11,000 geocoded and color-coded rapid damage assessments within just 5 hours of field-collection work, relying on first-time local, Citizen Corps volunteers. Additionally, to further improve its focus on the special needs community, PTF crews documented deliveries of hurricane preparedness kits to pre-registered, special needs homebound survivors during its deployment exercise in Pensacola, FL.

Future Development

PTF has developed a Train-the-Trainer Pathfinders Advanced Training Course for jurisdictions to establish a locally available volunteer management team. The course is currently under Department of Homeland Security (DHS) review. The training course prerequisites include the FEMA Emergency Management Institute courses IS-100, IS-200, IS-300, IS-400, IS-700, and IS-800b.

The two-part course has an instructional section and a practical exercise component. The instructional section consists of three 8-hour sessions that teach program management, including how to manage a Pathfinders team and to coordinate volunteers. Course students will then participate in a full-scale exercise to practice directing a team simulating an actual Pathfinders deployment during a disaster and managing 20 – 30 volunteers under the mentorship of course instructors. In this model, PTF is striving to create a replicable and sustainable resource for the local communities. When approved, the course will be eligible for full reimbursement through the DHS state homeland security grant program.

REQUIREMENTS

Keys to Success

Task Force Structure

The NIMS-compliant structure of PTF allows for effective volunteer coordination during a response. PTF observes a strict chain of command that reports to the local EOC and has the ability to quickly adapt to a unified command for mass care operations based upon its years of experience.

Network of Relationships

PTF depends on federal, state, and local agencies for a successful volunteer response effort. Cooperation with local CERT members and with federal and state officials proved especially crucial during the Hurricane Ike response. PTF strives to partner with agencies that share its focus on disaster survivors to promote cooperative response operations.

Resources

The Eagles Wings Foundation pursued licensing agreements with companies for programming software, GPS mapping technology, navigation mapping, and server software. The military specification cell phones cost \$2 – \$12 per phone.

Links

American Red Cross Safe and Well List

<https://disastersafe.redcross.org/>

NIMS Alert: Incident Management Systems Division Releases Resource Typing Definitions for Pathfinder Task Forces

http://www.fema.gov/pdf/emergency/nims/path_1507.pdf

Resource: Pathfinders Task Force

<http://www.fema.gov/pdf/emergency/nims/ptf.pdf>

The Eagles Wings Foundation

<http://www.theeagleswingsfoundation.org/>

US Census Bureau, Fact Finder

<http://factfinder.census.gov/>

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