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California Task Force Rescues

By **Larry Collins**

When the earth buckled and the island nation of Haiti suffered an unprecedented catastrophe on January 12, 2010, locating survivors deeply entombed beneath the rubble of collapsed structures became a primary consideration. Nowhere was the need for USAR capabilities more urgent than in Haiti, where 150 deeply entombed survivors were eventually rescued by USAR teams from the United States and other nations.

Experienced rescuers and disaster responders recognized telltale signs of a calamity. Within minutes, the U.S. Geological Survey reported a shallow, magnitude 7.0 earthquake within nine miles of Port-au-Prince. CNN was quickly airing video filmed from inside an airliner on the tarmac at the Port-au-Prince airport looking out over the city, which appeared to have been obliterated by a tremendous black-brown dust cloud that could only have been caused by thousands of structures collapsing at the same time.

In the aftermath of the deadliest disaster in the history of the Western Hemisphere, it was a race against time on many levels. In the streets of Port-au-Prince and surrounding cities and towns, as the dust clouds dissipated, it became clear to locals that the earthquake had leveled much of the city. Untold numbers of survivors were trapped beneath an estimated 280,000 collapsed buildings (including an estimated 30,000 commercial structures, most of them multistory reinforced concrete construction).



(1) An aerial photo of part of Area 8 shows the density and size of collapse. [Photos courtesy of the Los Angeles County (CA) Fire Department and USAID.]

It's a cruel irony of disastrous earthquakes that some of the most viable survivors are also the most

deeply entombed (and, therefore, farthest from detection or rescue). Those who are more critically injured need to be found and rescued even more quickly. Time was of the essence.

Even before the quake, emergency services in Haiti were often stretched thin, and the nation did not have the kind of elaborate urban search and rescue capabilities that are found in some other nations. For the people of Haiti, rescue teams, medical teams, food, water, and other assistance could not come soon enough. As in many large-scale disasters that overwhelm entire systems of government, infrastructure, and society, populations in the most affected areas were basically on their own for many hours or even days, with local emergency services equally impacted and the national government struggling to mount a response.



(2) Firefighter/Paramedic Pat Kelly placed an IV tube taped to a stick in Jinette's mouth—the first liquid she had had in five days.

For Haiti, the situation was even worse because it sits on an island (shared with the nation of Dominican Republic). Some smaller islands in the world have the distinct disadvantage of limited transportation routes even in normal times. In Haiti, because of destruction of port facilities and serious damage to the national airport, the whole transportation situation was made desperate by this quake.

Adding to the misery, many of Haiti's key government buildings and facilities collapsed in the quake, resulting in the loss of many public servants who would normally have been coordinating the disaster response. Even the U.N. Headquarters in Port-au-Prince was largely destroyed, with the Chief of Mission and many top decision makers and UN staffers among the dead, injured, or missing. This tragedy would complicate the process of organizing international aid because some of the key players were themselves missing or dead.



(3) Rescuers removed Jinette (on a backboard) from her entombment beneath the collapsed parking structure.

There were early reliable reports of hospitals collapsed. More shocking for some were photos of the national palace largely collapsed, its white domes lying atop partially collapsed walls.

DEPLOYMENT

Within 30 minutes of the quake, the U.S. Agency for International Development (USAID) activated both international USAR teams—Fairfax County (VA) Fire and Rescue Department (VA-TF1 for domestic incidents; USA-1 for international) and Los Angeles County (CA) Fire Department (CA-TF2 for domestic; USA-2 for international). USAID directed Fairfax County to deploy a “heavy” USAR team and a “medium” international USAR team (a total of 107 members for both teams) and L.A. County to deploy a “heavy” international USAR team (72 members).

Both teams were on the ground within about 24 hours of the quake. Within a couple of hours, they were conducting structure triage and initiating live rescues. Because of the unusual and devastating circumstances of this international disaster, USA-1 and USA-2 were later joined by four other FEMA system USAR teams as part of a “whole government” Interagency Agreement: New York Task Force 1, Florida Task Force 1 (Miami-Dade County Fire & Rescue Department), Florida Task Force 2 (City of Miami Fire Department), and Virginia Task Force 2 (Tidewater, VA).



(4) USA-2 began a nine-hour rescue of three women trapped in a small survivable void space beneath a three-story collapse.

The USAR teams from all assisting nations were coordinated by the UN's On Site Operations Coordination Center (OSOCC), which had been established even before the USAR teams touched down. Within that command umbrella, responsibility for assigning specific USAR missions to the U.S.-based teams fell to USAID's 17-member Disaster Assistance Response Team (DART), led by Tim Callahan, the principal regional advisor for USAID's Latin Americas Region. The DART coordinated much of the U.S. Government (USG) response operations on the ground in Haiti.

For many rescuers, the next two weeks became a blur of emergency operations in the midst of unprecedented devastation, including grueling tunneling operations to conduct live rescues; major "wide area search" operations conducted amid chaos in the streets; torturous travel (even for short distances) with thickly knotted gridlock on the roads; disturbing sights and sounds in and around collapsed buildings; dealing with logistical and other challenges; and the inevitable frustration of not being able to be in every necessary place at the same time to rescue everyone left trapped alive.

The USAR teams encountered so many collapsed buildings that it quickly became necessary to adapt the normal search routine (recon, hasty search, primary search, secondary search) to the overwhelming conditions in Haiti. This disaster was, in the truest sense, a triage situation on multiple levels.



(5) After six hours, rescuers exposed this woman (left) and her daughter entombed in concrete. They survived, but the third woman tragically succumbed to her injuries before she could be rescued.

U.S. rescuers joined local Haitians and other international teams working around the clock to save lives, with local Haitians helping in any way they could. The members experienced heat (high 90s in the daytime), aftershocks, the ever-present potential for secondary collapse, and the need to adjust work/rest cycles to maximize teams' life-saving capabilities. The teams were still rescuing survivors many days after the quake, so the hope of encountering additional trapped survivors who could be rescued remained high for nearly two weeks. In the end, approximately 150 deeply entombed people would be rescued alive by USAR teams from more than 50 nations, each strategically assigned by the OSOCC across the impacted area.

These typically were not rescues that could be made in an hour or two; most of the faster, less-complicated rescues had (by necessity) been left for the locals to make. The USAR teams were more often focused on tunneling their way beneath or through large collapsed structures to reach those who were deeply buried, situations whose demands exceeded the capabilities of the local responders. The teams were essentially mining for live victims trapped deep within mountains of debris.

Most of the rescues made by the USAR teams averaged eight to nine hours each. One rescue operation lasted 26 hours, and another for 32 hours. Multiple survivors were pulled out of some locations. Some of the rescues made by U.S. and other USAR teams required field amputations (typically performed by civilian board-certified emergency room physicians who staff the medical team manager position on the USAR task forces) because other options had run out and collapse conditions prevented rescuing the survivors any other way.

A description of all the rescue operations by all the U.S. and international USAR teams would require an entire book. The activated teams often worked together in tandem at some of the larger and more complex collapse scenes. Every team was busy night and day conducting search and rescue operations under some of the most challenging conditions.

ARRIVAL

On touchdown at the besieged airfield in Port-au-Prince, with the tarmac crowded with arriving cargo planes and helicopters taking off and landing, USA-2 was met by members of the USAID DART, who briefed Task Force Leaders Terry DeJournett and Pat Rohaley. USA-1 had landed several hours earlier, and the USAID DART and the OSOCC had already begun dividing the city into designated areas of responsibility for search and rescue operations to be conducted by the arriving international teams.

The USAID DART members reported that Area 8, a large section of downtown Port-au-Prince, had been assigned to USA-2. Area 8 stretched from the central city to the waterfront and included the collapsed national palace, the collapsed Ministries building, the collapsed Ministry of Justice, dozens of hospitals and schools (many of them collapsed), the penitentiary (from which thousands of inmates had reportedly escaped into the neighborhood immediately after the quake), and some of the densest and tallest construction in Haiti.

While the equipment cache was being off-loaded from the Air Force C-17 aircraft, personnel were loaded into vehicles and driven to the U.S. Embassy; its outside grounds served as the Base of Operations (BoO) and command post (CP) for some of the U.S.-based USAR task forces.

At the embassy, USA-1 members had already established a CP, a plans room, and other command elements. Fairfax County members and the USAID DART quickly oriented the arriving USA-2 members to the operation, to USA-2's area of search and rescue responsibility, and to the layout of Port-au-Prince. There were few reliably detailed maps (electronic or otherwise) of Port-au-Prince immediately available (a situation rectified by hard work from some mapping software companies and mapping groups that pitched in to create detailed maps for the rescuers). Initially, there was heavy reliance on the knowledge of local drivers provided by the U.S. Embassy, whose staff was also working feverishly to supply transportation.

RECON OPERATIONS

A basic recon plan was quickly agreed on, and the Red and Blue Recon Teams departed from the Embassy toward downtown Port-au-Prince. The Red Recon Team was given an assignment en route to conduct a hasty search at the Hotel Caribe, a large hotel complex that experienced multiple collapsed multistory sections. The Blue Recon Team was first sent to recon a devastated area outside Port-au-Prince known as Carrefour, with a population exceeding 400,000 people and reports that most of the area had been leveled.

En route to the Hotel Caribe, the Red Recon Team came across devastation on a scale that would be shocking in most circumstances. Unfortunately, this would soon become the norm. The hotel's main building had survived the quake, but some of the multistory guest buildings within the complex had pancaked. A hasty search turned up no signs of life, and the Red Recon Team leader had to give that bad news to relatives of guests missing in the collapses, including some U.S. citizens who had been staying there. As bad luck would have it, an international disaster relief conference had been in progress outside Port-au-Prince, and many international participants including staff of USAID (who would normally be responding to this disaster) were injured, killed, or missing in the Hotel Caribe and the Hotel Montana.



(6) In this separate rescue in which three more women were found buried alive, the first two women—sisters—had just been pulled from the rubble. The third woman was rescued alive. The rescue of all three required a 32-hour tunneling and breaching operation.

Moving into central Port-au-Prince to begin recon operations in Area 8, the Red Recon Team convoy had to pick its way past numerous buildings collapsed into the street, some of which were on fire; around bodies stacked in intersections; and through crowds of people who were in the streets because they were fearful of being near large buildings that were still standing (many on the verge of secondary collapse either spontaneously or in the next aftershock).

The immensity of this catastrophe was becoming more apparent with every block. Port-au-Prince is like a huge amphitheater, a low-lying waterfront in a crescent-shaped bay gradually rising as you move inland, and then hundreds of thousands of homes—most of them concrete or cinderblock—clinging to a backdrop of steep mountains that completes the amphitheater effect. When task force members focused on the hillside neighborhoods in the distance, it became clear to them that they were seeing thousands of collapsed buildings as far as the eye could see. When they turned their gaze back toward the center of the city, the number of collapsed buildings exceeded their ability to count them. Even for the most experienced members, what they were seeing in Port-au-Prince was off the scale. There was nothing in their experience with which to compare.



(7) Locals led a recon team to this collapsed six-story school, where a man named Makinson was trapped in a survivable void space.

The sheer number of structures flattened by this earthquake made it necessary to adjust the recon and search methodology from the start. Under different conditions, the normal strategy for reconning a section of a city hit by an earthquake, a hurricane, or another disaster might be to conduct a standard windshield survey and structural triage, looking for the worst damaged areas, and then for recon teams to conduct block-by-block recon on foot. But under these circumstances, with so many collapsed buildings up and down literally every block in the city (most multistory concrete structures), and with the near certainty that many people were trapped alive inside collapses all over Port-au-Prince, getting out of the vehicles and walking the streets at this stage would simply have slowed down the recon to an unacceptable pace. Every time the recon team did stop, a throng of people quickly crowded the vehicles asking for help in the form of everything from food and water to medical aid and physical rescue. So moving up and down the streets on foot at that point would have been inefficient.

At that point there was really no good way to map all the collapses because there were so many downed buildings everywhere, and many of them lacked physical addresses. Although GPS tracking was being conducted (with waypoints being documented as needed), taking detailed GPS readings and detailed descriptions for every collapse would once again have slowed the progress to unacceptable levels.

So to provide the most help to the most people with resources stretched so thin, the best initial recon strategy was to drive the streets looking for knots of people digging in the debris pile and to talk to locals to confirm live trapped survivors. Groups of people digging in the debris caught our attention from the beginning. We would stop and inquire in French or English: “What are you digging for?”

Sometimes we found that locals were trying to locate food, water, and other supplies in collapsed buildings. Often they were trying to free the bodies of relatives, friends, or neighbors. Sometimes we found locals digging for live survivors that they were talking with. In some cases, they were handing down food and water to trapped victims who could be accessed from the surface.

Using this adjusted recon process, we identified, mapped, marked, and reported back to the BoO live rescue sites; the BoO would then deploy one or more rescue squads (five rescue specialists and one

squad leader, typically a fire captain) from the task force. Then the recon team would move on, proceeding to identify additional live rescue sites.

CARREFOUR

Meanwhile, the Blue Recon Team's convoy was making its way through Carrefour, apparently the first formal rescue resource to arrive there. Members encountered a mixed residential and commercial area of nearly half a million people, and most buildings were either collapsed or seriously damaged. Their main task was to assess the conditions in Carrefour and report back to the CP so the information could be passed on to the USAID DART and the OSOCC and appropriate international teams could be deployed there as they arrived in the country.

With force protection stretched thin and darkness approaching, the Blue Recon Team was directed to proceed to Area 8 in Port-au-Prince after completing the Carrefour recon. Naturally, it's difficult for any firefighter or rescuer to leave an area so devastated without stopping to help; but this was a catastrophe, and the job of the first rescuers on the ground assigned to recon was to help determine where the most trapped survivors were likely to be so reinforcements could be dispatched there. The sheer magnitude of this disaster—and in this case the magnitude of destruction in Carrefour—made it clear that a very substantial task force presence would eventually be required there.

The Blue Recon Team completed its assigned mission and met up with the Red Recon Team in Area 8, where central Port-au-Prince was equally devastated, with more and larger buildings and an even more dense population and plenty of search and rescue work for everyone. In fact, elsewhere in Port-au-Prince, USA-1, which arrived several hours before USA-2, was already engaged in multiple live rescue operations in its assigned area. As the teams from 50 or so other nations began to arrive in the coming hours and days, all would be fully engaged in active search and rescue operations for extended periods.

LIVE RESCUE OPERATIONS

During their windshield recon of Area 8, the Red Recon Team was told that at least one survivor was trapped beneath the rubble of a three-story reinforced concrete building that had collapsed at the Ministry of Education. As the convoy halted at the entrance to the Ministry compound and the task force members stepped out, a crowd quickly gathered because they knew some form of help was arriving from outside the city. Even as the team was being briefed by Ministry of Education officials, Haitians on the street were tugging at the rescuers and pleading with them to search several other buildings where they said trapped survivors were.

This became typical of nearly every place where the teams stopped: Rescuers would be besieged by throngs of people pointing out places where trapped persons were reported. Sometimes this local intelligence turned out to be accurate, and sometimes it would lead to hasty or primary searches that found no signs of life. Sometimes the language barriers (French and Creole typically were spoken in Haiti, sometimes with English) left us relying on hand gestures and abbreviated descriptions to indicate “survivors” or “deceased,” “trapped” or “not trapped.”



(8) Rescuers used vertical breaching to reach Makinson. Even with power tools, it was a slow, laborious, meticulous process to reach the trapped man.

In this case, part of the Recon Team proceeded into the Ministry of Education grounds, while other members broke off and cautiously proceeded on foot down the street and around the block to a series of collapsed buildings local residents pointed out. Personnel accountability was always important, especially when teams were splitting up on foot in unknown neighborhoods with no reliable maps and only handheld GPS to determine their actual locations. Without repeaters in place at this point (task force communications specialists were already hard at work identifying sites for repeaters and putting them up, a process that continued throughout the mission) and no cell phone service in Port-au-Prince, handheld radios and satellite phones provided critical—if sometimes limited—communications.

The foot search around the block yielded no signs of life in the multiple collapsed buildings locals pointed out, even using canine search teams. Those structures would be the subject of secondary search operations as time and resources permitted.

As darkness approached, naturally security concerns arose. Nighttime search operations are notoriously dangerous in disasters because rescuers cannot easily visualize secondary collapse conditions, open holes and downed power lines, and other hazards. We were told to pick one or more live rescue sites and start working them through the night.

A trapped survivor was confirmed in the collapsed Ministry of Education building. The muffled voice of a man could be heard through multiple layers of concrete slab that had pancaked. Red Rescue Squad 1 was committed to this rescue, likely to extend late into the night or early the next morning.



(9) Rescuers reached Makinson (under the blue tarp for protection) at the bottom of this vertical breach shaft.

After assigning members of the squad to crawl into the void spaces to try to get a fix on the survivor's position (and finding that there was no way to directly access him through horizontal gaps and that this rescue would require "vertical breaching" through multiple layers of thick reinforced concrete slab), the Red Rescue Team manager requested Red Rescue Squad 2 to respond to the Ministry of Education with equipment for a major vertical concrete breaching operation. In the interim, the crews went to work with hand tools. The request brought two rescue squads to this part of Area 8 (at least one squad for the Ministry of Education rescue operation and another for any additional trapped survivors who might be found as darkness set in).

The Ministry of Education building had not pancaked horizontally but at an angle, with the slabs slanted downward toward the access road. This was similar (although far smaller in size and area) to the collapse of part of the Pentagon in the 9/11 attacks, and it presented some similar challenges: slabs that could at the first provocation (aftershock, unsupported tunneling, selective debris removal) "avalanche" downward onto rescuers, possibly crushing survivors between slabs; and difficult conditions for crews conducting shoring operations.

Further complicating this and most of the rescues in which USA-2 engaged was the lack of conventional shoring materials. Whereas USAR resources operating at U.S. disasters can anticipate the availability of large quantities of wood for shoring, in Haiti there was a scarcity of wood shoring material. This required task force members to be imaginative in the selection and use of alternate shoring materials and methods.

Structures Specialist Mikael Gartner (a civilian structural engineer who also is fluent in French and was often called on as an interpreter and who has been working on concepts for alternate shoring options in

disasters just like this where conventional shoring materials are in short supply) came up with a novel solution for stabilizing this slanted collapse: He organized a group of local workers to pile concrete chunks and broken concrete blocks against the bottom of the pancake, using that material and a half-crushed vehicle that was there as alternate shoring to prevent or limit the downward movement of angled slabs in the event of an aftershock or a secondary event.

Meanwhile, the Red Recon Team split off from Red Rescue Squad 1 and quickly encountered a number of large collapsed buildings (including hospitals, schools, factories, and apartment buildings) where live victims were likely to be found. A young Haitian woman approached the convoy and explained in perfect English that she knew of numerous collapses where possible survivors had been reported and offered to show us the locations. She rode in the lead convoy vehicle. Just then, a radio request from the CP directed us to proceed to a university where there were reports of multiple trapped survivors. This university was near the eastern boundary of Area 8, where the city rose away from the bay into the coastal mountains that were crowded with neighborhoods clinging to the slopes.

Our Haitian guide directed us to the university, saving valuable time. On arrival, we encountered the Belgian USAR team engaged in search, tunneling, and rescue operations at the main building—a five-story reinforced concrete building that had collapsed into a tightly layered concrete cake. The Belgian team leader explained that his team had located many voids and potentially one or more live victims trapped within. It would be a time-consuming, labor-intensive operation to clear this building of victims.

Looking over the city from the hills, it was evident that many more buildings across Port-au-Prince were in the same condition: They were collapsed, with unknown numbers of live people trapped inside the mountains of debris. We thanked the Belgian team leaders, gave them our contact radio frequencies and satellite phone numbers in case they needed further assistance, documented the site and its GPS coordinates, and left the university to continue the recon of Area 8 with our Haitian guide showing the way. At all times the technical information specialist assigned to us tracked our movement with GPS and created waypoints to identify significant finds.

Within 10 minutes of leaving the university, we encountered a group of people digging in a collapsed building across from a pancaked multistory Unibank building. When our guide inquired what they were doing, the residents explained they had found a survivor trapped beneath the collapse of a multistory concrete block building that apparently had a cellar. The locals were handing down food and water to the person, who was trapped in a “survivable void space” and appeared to be stable.

With so many other people likely trapped in even more desperate conditions, we had to remain in recon mode and move on after requesting rescue resources. We documented the GPS data for the building, its approximate street location, and the survivor’s condition, radioing it to our CP for a rescue squad (or, as more resources arrived, possibly another USAR team) to be dispatched there to begin rescue. We then continued with the recon.

With the afternoon ending and darkness quickly coming on, our guide led us to a six-story reinforced concrete school that had completely pancaked, where multiple survivors had been rescued on the day of the quake (and where many more had been confirmed as fatalities). As we pulled up in front of the building (about 80 feet wide and 300 feet deep), locals explained that a man was buried alive in the rear section of the building, deep inside the concrete mountain.

Sure enough, as we climbed to the top of the collapse and headed to the rear, we found two local men using hand tools in an attempt to breach the top slab. They introduced us (by yelling into the void spaces between slabs on the B side of the collapse) to a man named Makinson. I spent several minutes talking (through the concrete slabs that separated us) to Makinson, trying to triangulate his exact position and

assessing his mental and physical condition (he was lucid, with a strong voice, and indicated he was trapped in his desk chair in a small survivable void space).

Members began working their way toward Makinson, first by exploring horizontal openings and voids in an effort to find a pathway to him. When those efforts reached a dead end, we began a major vertical breaching operation. We requested a rescue squad through the CP because of the need for heavy breaching, cutting, and other tools and personnel. In the meantime, the members of this recon team transitioned to rescue squad duties, albeit without the preferred equipment. Until the additional USA-2 Rescue Squad arrived, they worked with sledgehammers and other hand tools to begin the vertical breaching. Members spray painted an approximately 8- × 8-foot square on the top slab above the location we had determined Makinson most likely would be. That would be the first part of the vertical breach. It's important for the first breach hole to be sufficiently large, to allow rescuers to work effectively in the subsequent vertical breaches (into the lower levels). The subsequent holes will necessarily be smaller than the first hole, so it's important not to dig yourself in so tight that you can't operate effectively.

The team quickly realized that it would not be possible to expedite breaching by fracturing the concrete slab: These slabs had been created by first laying a matrix of concrete blocks and reinforcing bars (rebar) across the entire length and width of the roof (and all the floors below it) and then pouring concrete. The result was a layer of concrete over the blocks and rebar.

Although some of the concrete was of relatively low compression or "soft" and lacked the amount of rebar we might encounter in other nations and that most of the collapsed buildings had not been engineered for large dynamic lateral earthquake loads, it was also true that once these buildings collapsed, vertical breaching and other rescue operations in Haiti were complicated by factors like the concrete over block and rebar slab construction that all the USAR teams repeatedly encountered. Even so, the rescuers were not to be deterred; throughout the entire mission, USAR team members from all nations used whatever methods and tools were available to locate, reach, and rescue trapped survivors.

As Recon Team members took turns pounding away at the top slab (with assistance from several school employees and bystanders who volunteered to take turns swinging sledgehammers), another Rescue Squad was deployed from the USA-2 BoO. Red Rescue Squad 2 encountered numerous obstacles while attempting to reach the Makinson rescue site, including darkness that overtook the city and made everything pitch black except for camp fires, headlights, and rescue sites. The rescue squad attempted to reach the collapsed school using GPS coordinates without reliable detailed maps, through dense mazes of streets that wound around, up, and through the hilly terrain. They wound their way around growing piles of bodies, debris, and now people beginning to make their camps in the streets away from buildings.

RESCUES CONTINUE THROUGH THE NIGHT

Meanwhile, back at the Ministry of Education, the other half of the Red Recon Team was joined by members of the Blue Recon Team, working to vertically breach their way down to the man trapped there. As Red Rescue Squad 1 arrived, the breaching went faster with the jackhammers, an hydraulic tool system, and other heavy concrete breaking and cutting tools they brought. Eventually, after nearly nine hours, they reached the man; vertically extracted him from the shaft they had created; treated him for dehydration and injuries; and carried him down on a rescue litter to the ground level, where he was transferred to a door ripped off a building across the street and transported to one of the functioning clinics in the back of a box truck used by the rescue squad to transport equipment. This was not your typical prehospital care hand-off, because in Port-au-Prince an ambulance was rarely seen and the fire

department was constantly engaged in firefighting and rescue operations around the city (and so many hospitals and clinics had been destroyed). The first survivor was lucky to be transported in a box truck; most of the survivors pulled out by USA-2 (and probably most other teams) were transported by groups of bystanders or family or medical attendants, who carried the patient on a door through the streets to the closest available medical care.

As Red Rescue Squad 2 arrived at the collapsed six-story school (the site of Makinson's ongoing rescue operation), vertical breaching progressed faster, but the going was still slow because of the toughness of each slab. USA-2's task force leaders had also deployed Blue Rescue Squad 1 to assist; at around 2 or 3 a.m., the Red Recon and Squad members began the "rest" part of the "work/rest cycle" and the operation was transitioned to the Blue Rescue Squad. The second squad worked into the early morning hours, reaching Makinson about nine hours into the operation. Because of his position and the way he was trapped, Makinson had to be pulled out by the legs, raised out of the vertical shaft nearly upside down, and then transferred to the requisite rescue litter and treated for dehydration and injuries (before being transferred to a door for transportation to the closest medical care). The second squad got back to the BoO after sunrise and got some rest as the other recon and rescue squad members were gearing up to go back out into the city to continue recon and rescue operations.

SUSTAINED RESCUE OPERATIONS

On January 15, the other U.S.-based USAR teams deployed to Haiti had arrived and set up their respective BoOs. The American USAR teams had already made a number of successful rescues, and more were in progress.

USAR teams from many other nations were on the ground and, having been given their jurisdictional assignments by the OSOCC, were hard at work locating and rescuing survivors across Port-au-Prince and surrounding areas. Even with all the logistical, travel, and other challenges, lives were being saved across the impacted area. Most of the rescues conducted by the USAR team involved deeply entombed survivors whose extrication required extensive breaching, cutting, tunneling, shoring, and rubble pile medicine operations. Some of the rescues required field amputations to free badly trapped survivors.

As the days went on, a number of additional successful rescues were conducted. On January 15, three women were detected alive beneath a collapsed three-story reinforced concrete structure, requiring nearly 10 hours of tunneling and breaching. One of the women, who required a field amputation to free her from a very difficult entrapment, tragically succumbed to her injuries about 40 minutes before being extricated. On the same day, in another section of Area 8, three more women were located and rescued from a multistory reinforced concrete collapse, requiring USA-2 members to work around the clock for 26 hours to free them. Multiple tunneling, breaching, delayering, and other operations helped to search areas where canine search teams indicated survivors might be.

On January 17, USA-2 personnel encountered a trapped survivor named Jinette, whose spirit in the face of despair and pain would come to exemplify the spirit of Haiti and the Haitian people. Personnel had just left the scene where a Caribbean rescue team had flagged them down and asked to assess the need to amputate a woman's arms to extricate her and another scene where they had been flagged down to investigate sounds of a woman beneath a debris pile where a building had collapsed into the street. After digging for nearly two hours, USA-2 cleared the site but found no survivors.

Personnel were then flagged down by a British news crew where a large excavator was working. The reporter said that a woman had been heard and then was seen in a void space in a four-story reinforced concrete bank and parking structure that had collapsed. Walking up the mountain of debris and down

into a valley that the excavator created, we were directed to a small hole.

Looking down into the darkness with a flashlight, we saw the face of a woman who had been trapped for five days in a small survivable void space with both her hands crushed between the concrete slab over her head and a metal sign and post. She was talking, thankful that someone had discovered her after so long in total darkness, amidst rubble, death, and aftershocks. She had been unable to signal anyone with anything but her voice until a boy climbing on the debris pile during a heavy equipment delayering operation heard her and told her husband, who had been desperately searching for her there for days.

Over the next three hours, the team assessed, strategized, and worked to remove Jinette from the space. They gingerly worked with a combination of heavy equipment and hand digging to open up a pathway to reach her. They kept talking to her; even though she was suffering, she managed to talk with us in English, thanked us for being there to help her, and even occasionally joked with us. Later, it dawned on us that Jinette did not yet understand the entirety of the catastrophe that had enveloped Haiti: She only knew that there was an earthquake that had collapsed the building she was in.

Then firefighter/paramedics crawled into the hole to start an IV on her and begin freeing her with an assortment of rescue tools, supported by the rest of the team. There was always the potential for more aftershocks and collapse, but, like all the other USAR teams in Haiti, they just kept going.

When she was finally freed, Jinette surprised all of us by breaking into song in Creole. It took a few seconds for us to realize that it was a sort of Gospel song called “Don’t Be Afraid of Death.”

Jinette’s vibrancy, her tenacious grip on life, her sense of humor even in the face of despair, and her faith in something bigger than all of us exemplified the spirit of Haiti, so resilient in the face of continuing hardship.

LARRY COLLINS is a battalion chief and a 30-year veteran of the Los Angeles County (CA) Fire Department (LACoFD). He has been a rescue captain for 18 years and a search team manager for the LACoFD’s FEMA/OFDA USAR task force for domestic and international response since 1992. He has served on FEMA USAR incident support teams since 1995. He is an instructor at FDIC and other fire/rescue conferences and the author of fire service magazine research articles and case studies, the textbook series *Technical Rescue Operations*, the Rescue chapter of *The Fire Chief’s Handbook*, and the Support of Rescue Operations chapter of *Fire Engineering’s Handbook for Firefighter I and II*.

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