

From  to Cell Phone Forensics

# Cell Phone Forensics on Search Frontlines

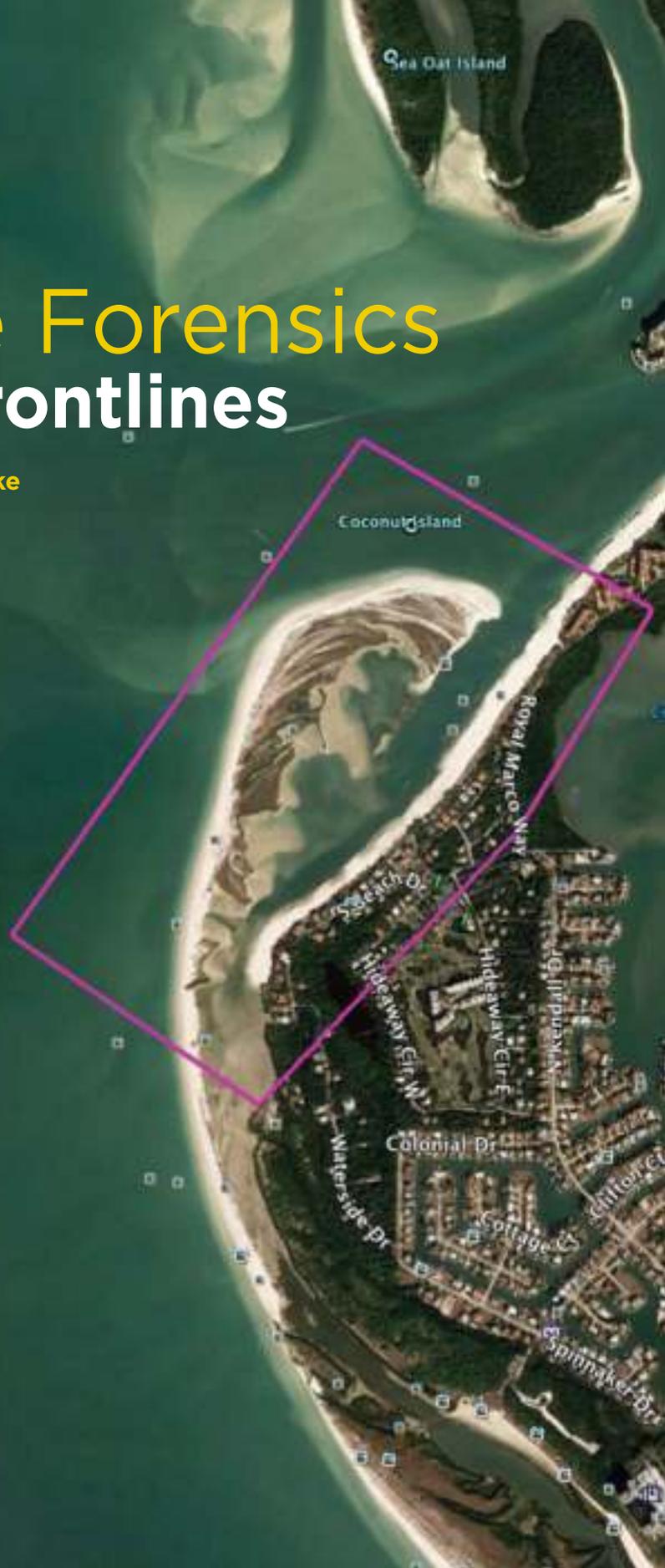
**Maj. Justin Ogden and his team make sense of data for real-time clues, lead rescuers to those in need**

*By Vicky Travis*

**N**othing replaces boots on the ground when it comes to search and rescue missions. But it's the behind-the-scenes, cell-phone-data crunching that can help point those searchers in the right direction. And that means more lives saved.

In its 1,000th mission, CAP's National Cell Phone Forensics Team was able to lead the U.S. Coast Guard to a missing boater stranded on Coconut Island (search area identified here). The boater became stranded on the island, located at the mouth of Marco Bay south of Naples, Florida, when the tide went out. Even though the boater's phone had lost power, the CAP team was able to pinpoint his location when the phone became stationary.

Photo © 2016 Google





Maj. Justin Ogden usually works at home, often via videoconferencing with other members of CAP's National Cell Phone Forensics Team. Here, he confers with Col. Brian Ready, who has served on the team for the past nine years.

**C**ivil Air Patrol's National Cell Phone Forensics Team worked its 1,000th mission in March 2017. In the first seven months of 2017, the team had assisted in 216 missions, averaging eight each week.

It may seem like a no-brainer to use cell phone data to find missing people in this day and age when very few leave home without one. But CAP brings more to the table than just collecting data. Deep analysis, done quickly and efficiently by the cohesive team led by former CAP cadet, now CAP Maj. Justin Ogden, can shorten the search time by narrowing the search field.

"It's not just where the phone last was, but we can get a picture of a stream of events over time," he said. With a large set of data, the team can see trends, and because of the team's expertise gained from so many missions, it can filter out good and bad data.

"Our goal is to see, collect, analyze and present the searchers with actionable information," said Ogden, 36. "We're uniquely positioned to help. Because misleading clues are often easily accessible, searchers might chase

that one bad clue. We're extremely familiar with good and bad data."

The team would wish a happy ending for every search, but sometimes it's not possible. It's then they help families find closure quicker.

"We work a lot of searches as a contributor and we provide some clues," said Ogden. "And we work others where we are the only clue they had."

On Aug. 4, an avid hiker and her dog were found alive near Mount Teneriffe in Washington State after she went missing for four days during a heat wave. The cell phone forensics team was eventually called in and used cell phone data to direct searchers to her.

King County, Washington, searchers called Ogden as soon as they found her in the woods and told him, "Hey, someone wants to say something to you." They held the phone up to her family gathered at the

command post and they all yelled a big 'thank you.'

"That was a good one," said Ogden, who contributed to that mission while on vacation to see family. He even worked from his laptop in the passenger seat as his wife drove through Pennsylvania. In the end, it was gratifying to be able to watch a live stream of her rescue."

"That's why we do it," said Col. Brian Ready, vice commander of the Southwest Region, who is part of the cell phone team. "How cool is it to be on the front line of that?"

### **The olden days**

In 2006, when Ogden had been a CAP volunteer for 13 years, he started the first cell phone search in the days of the Blackberry and flip phones.

A cell phone provider gave him data, which he manipulated "by hand" in Excel and then used Google Earth

to inform searchers. Now, smartphones are ubiquitous, and the amount of data they give is too overwhelming to work by hand.

So Ogden, always one to dive deeper, created software that would crunch the raw data and pour it into a program that connects to Google Earth.

Cell phone providers don't have to give out data, but for missing person searches they will. CAP's cell phone team has built relationships with the big four providers and some regional ones, so getting the records has become easier. They know CAP's good work and reputation.

"In '08 or '09, we would call cell phone companies and they'd ask, 'Who are you?'" said Ready. "Now, they all know us. They know the information we need."

A member of the team, often Ogden, Ready or Maj. Jerad Hoff, contacts the cell phone provider and requests records for a specific period of time.

"We take historical records from cell phone providers and use the tools that Justin built to hone in on a location," said Ready. "Justin took cell

phone forensics to the next level."

"It used to be that we were looking somewhere in the state, or in the county," said Ready, who joined CAP in 1982. "Now within the first few hours, we can narrow it to miles within the county. The impact is that our average mission runs less than three days."

Ready tells of a search in New Mexico, in which a lost airman's phone was on, so they texted to see if the message would deliver. Then, the team used a program Ogden built, which sends a link to the phone that the person clicks on, bringing up a map and sending the team coordinates off the phone. The airman was up on a cliff, and he was rescued based on that location.

Ogden also built a program that is sent to searchers, showing a "you are here" and directions to the person, said Ready.

"What he's done is built the tools and he's taught four or five of us how to do it," said Ready. "He's like Yoda. And, some of us are decent Jedi, but the tough ones (still) go to him."

The team, which by design stays small, has added Maj. Paul

Combellick and is training two new members. Missions are worked by one or sometimes all, depending on the time and needs. The team members balance jobs, families and time zones to get the mission done.

"It's a cohesive team," said Ready. "It's gotten to where we can almost read each others' minds."

## From the beginning

Ogden's day job is actually not in computers, but in electrical engineering. He works at Harris Corp. in Virginia.

Growing up in Pennsylvania, Ogden joined Civil Air Patrol as a cadet as soon as he was old enough, which in 1993 was after sixth grade.

"I was ready to join as soon as I could," he said. His grandparents took him to air shows in his small town where he saw CAP members volunteering, and he loved being around airplanes. His grandfather flew in World War II. "With my family being in the military, I also wanted to be in uniform."

Throughout his teens, he had leadership opportunities at encampments and a chance to fly in aircrafts



Ogden, center, is the founder of CAP's cellular forensics team. He's pictured with two other members of the team, Ready, right, and Maj. Jerad Hoff.



Then-1st Lt. Ogden, right, commander of the Pennsylvania Wing's Mid-State Composite Squadron, stands with Maj. Jeff Riley during a search for an overdue aircraft in April 2006. Ogden employed cell phone triangulation as part of the search to help find the crash site.

## MAJ. OGDEN'S AWARDS

- International Association of Emergency Managers  
Emergency Management Volunteer of the Year,  
August 2016.
- Civil Air Patrol Distinguished Service Award, August 2015
- 2014 1st Air Force (AFNORTH) Commander's Award,  
August 2015.
- 2010 National Aeronautic Association Public Benefit  
Flying Award in the Distinguished Volunteer category.
- Pennsylvania Wing Civil Air Patrol Bronze Medal of  
Valor, November 2006.
- Civil Air Patrol Commander's Commendation, April 2006.



In a ceremony at the U.S. Capitol in Washington, D.C., in 2010, then-Capt. Ogden, center, receives the national Public Benefit Flying Distinguished Volunteer Award from representatives of the award's sponsors.

and even in a C-130. As a cadet, he went on searches for missing aircraft, often running the radios on a mission base. He became a squadron commander in Pennsylvania, where he did hands-on work on the ground as a searcher. Also as a cadet, he had the opportunity to be interviewed on a radio station, which would open the door to another interest. He worked at the station as a DJ during high school. CAP also opened the door to working at an airport, repairing computers and even weed-eating the runway. He traded his work time for flight time and flew solo by age 16.

During his busy college years, his volunteering with CAP took a hiatus, but he got involved again after graduation from Pennsylvania State University with a degree in electrical engineering.

Always seeking the smarter way to do something, Ogden loves to dig deeper.

"I've always had an interest in deep dive analysis," he said. "How did the puzzle pieces get here? And who made the pieces?"

So while his career is in electrical engineering, Ogden has always "dabbled in programming" and has been writing software for eight years now for CAP.

Though the work of Ogden and the cell phone forensics team is usually behind the scenes, they've been noticed. Ogden has been interviewed on CNN and by other media outlets. He's also received several awards.

"When a story breaks that we're a part of and we interview, it's fun," he said. "It's exciting, but we don't seek it out. We're the silent searchers."

What's next? Ogden has already automated several things to start a search, such as email and automatic phone calls to team members and tools that do the paperwork for the carriers, all of which speed up workflow. Now he has some ideas to make the team's Google Earth experience collaborative. Right now, each one does his own work, saves a file, sends it or shares a screen.

Ogden and his wife, Amy, live in Forest, Virginia, with their two children, 3 years old and 10 months. ▲

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— Col. Brian Ready, on his colleague on the National Cell Phone Forensics Team,  
Maj. Justin Ogden