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WRITTEN STATEMENT FOR THE RECORD

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SUBCOMMITTEE ON EMERGENCY MANAGEMENT AND TECHNOLOGY
"UNMANNED AERIAL SYSTEMS: AN EXAMINATION OF THE USE OF DRONES IN EMERGENCY RESPONSE"
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INTRODUCTION AND BACKGROUND:

Good afternoon, Chairman D'Esposito, Ranking Member Carter, and members of the subcommittee on Emergency Management and Technology. On behalf of my organization and partners, I would like to thank you for inviting me to testify in front of you today.

My name is Rahul Sidhu, and I serve as the Chief Executive Officer of Aerodome, a company specializing in next-generation drone-as-first-responder technology. My previous company also operated within public safety, where I concentrated on developing customer service systems for local law enforcement agencies.

Over the past 14 years, I have served as a Paramedic, Crew Chief, and Police Officer in the city of Redondo Beach, where I continue to serve as a reserve officer. I am not merely a business executive looking to profit from working with public safety agencies; I consider myself a police officer first and a business executive second.

THE BIRTH AND SUCCESS OF DFR PROGRAMS:

I am here to speak about the application of unmanned aerial systems, more commonly known as drones, and their role in public safety. I recognize that many of you may already be acquainted with the use of drones in emergency response over the past decade. Previous applications have included perimeter security, safely searching the interior of residences for tactical teams, reconstructing accident scenes, and search and rescue. Many police and fire agencies have

adopted similar programs, and they have found tremendous value in doing so.

I am not here to discuss previously understood and established drone use cases. I am here to talk about the future. This future is anchored in the concept of "drone-as-first-responder." To explain this further, let me share how this future came to be.

In May 2018, my colleague Fritz Reber, who now serves as a Vice President at Aerodome and was previously a Captain with the Chula Vista Police Department, launched an experiment. He deployed drones directly from the police department's rooftop to respond in real-time to the scenes of 911 calls. Since these drones responded to calls directly, he referred to this initiative as "drone-as-first-responder," also known as DFR. I was particularly intrigued when I learned about this program, as I had heard that it virtually reduced their response time to emergencies by more than 50%.

Recognizing the importance of true DFR, I followed in Captain Reber's footsteps and spearheaded the development of the nation's second-ever DFR program. In March of 2020, I served as a reserve police officer with the Redondo Beach Police Department, where I continue to serve. Like many police and fire agencies at the time, we were short-staffed due to COVID. It's worth noting that many agencies are still short-staffed today. The Police Executive Research Forum yearly survey revealed that since 2020, sworn numbers across responding agencies are down 4.8%.

We knew DFR could revolutionize our approach to staffing challenges. By implementing this cutting-edge program, we achieved several significant improvements:

- **Centralized Drone Launching:** By launching drones directly from a central location to calls-for-service throughout the city, we reduced our average visual response time by nearly 70%.
- **Efficient Triage of Responses:** We triaged police and fire response more efficiently, reducing approximately 25% in the number of low-priority calls that patrol officers had to respond to.
- **Improved High-Priority Response Time:** This ripple effect accelerated patrol officers' physical response time to high-priority calls.
- **Increased Apprehension of Suspects:** This program also led to a significant increase in the apprehension of suspects fleeing the scene of crimes, resulting in safer outcomes for our community.
- **Longevity and Impact:** This program has remained operational at the Redondo Beach Police Department for nearly four years, with over 5,000 DFR flights to date.

UNDERSTANDING AND DEFINING DFR:

It's crucial to understand what constitutes DFR and what does not. DFR is defined as utilizing a system of pre-positioned drone launch points, flying drones directly from these launch points to the scene of an emergency. These drones are remotely piloted through a computer, typically beyond a visual line of sight, from a central location. To clarify, simply launching drones at the scene of an emergency is not drone-as-first-responder. Patrol-based drone programs have been around for nearly a decade, and while they can be helpful, they are not DFR programs. DFR programs are designed to have the drone arrive on the scene first before any first responders on the ground arrive. If the system isn't specifically designed to send a drone to an incident within seconds of learning of an emergency, it is not a drone-as-first-responder program.

I want to emphasize why DFR exists: its undeniable impact on saving American lives. Today, dozens of agencies have received the necessary waivers from the FAA to fly Beyond Visual Line of Sight to support their DFR programs, with more than double that amount currently working to do the same. These agencies have seen tremendous success with their DFR programs, sharing countless stories of lives saved, including those of children. Their DFR programs have been critical in modern crime-fighting strategies, significantly reducing retail theft, violent crime, and property crime. Just last month, our system was used to find and rescue an unconscious victim of a violent assault and rape who likely would have bled out if the drone had not located them on time.

The agencies are leveraging DFR programs not only to locate individuals needing rescue, apprehend dangerous criminals, and protect first responders but also to de-escalate potentially fatal encounters. For instance, many agencies have reported sending drones to incidents where people reported a man with a firearm threatening the public. In these situations, drones flew overhead and verified that the firearm was not real. This information was relayed to officers, allowing them to safely approach these individuals without resorting to deadly force.

THE IMPACT AND FUTURE OF DFR, NEXT-GENERATION DFR 2.0:

Most of the public safety agencies I’m referring to are implementing the first iteration of DFR, which we call DFR 1.0. DFR 1.0 is limited, as it requires two staffed personnel per drone launch site and can only be operated during hours in which these launch sites are fully staffed. I want to introduce you to DFR 2.0, also known as next-generation DFR.

Aerodome is currently the sole provider of DFR 2.0 technology, which refers to a fully remote, automated, multi-station, and multi-drone operation. This involves several advanced features:

- **City-Wide Drone Coverage:** Positioning drone stations across various locations within a city while managing the launch and flight of the drones remotely from a central hub.
- **Fully Remote Operations:** Drones can safely operate day or night without a visual observer, utilizing a suite of ground sensors such as 3D radar, radio frequency, remote ID, and ADS-B.
- **Automated Docking Station:** Once their mission is complete, the drones return to their docking station, where robotic arms swap out their batteries, preparing them for the next mission.
- **24/7 Operations:** Enables the launch of drones 24/7, in various weather conditions, from mobile devices, without needing to rely on full staffing.

DFR 2.0 significantly reduces personnel requirements, allowing agencies to operate fully functional DFR programs with a fraction of the staff needed for DFR 1.0. Moreover, it provides scalable, sustainable, and affordable next-generation air support coverage, enabling every city in America to benefit from this advanced technology.

Although our agencies are still working with the FAA to obtain the necessary waivers to operate without visual observers, our DFR 2.0 technology is already deployed in cities like Redondo Beach, where the average drone response time to an emergency is now 85 seconds.

ETHICAL RESPONSIBILITY AND TRANSPARENCY:

We recognize that as leaders in the space, it is our responsibility to build this technology ethically and with the best interest of community members at the forefront of our minds. As with all advancements in public safety technology, police accountability and transparency should not only be considered but should advance alongside the technology itself. For instance, today's conventional helicopter-based air support video recordings are uploaded usually only when deemed evidentiary, with no straightforward process for the public to submit Freedom of Information Act requests to view them.

DFR 2.0 systems record and upload entire flights, much like bodycams. All flight logs are then uploaded to a community dashboard, where the details of each flight are readily accessible to the public, with any personally identifying information redacted.

Furthermore, several key differences emerge when comparing traditional helicopter-based air support programs to highly advanced DFR 2.0 programs. Few agencies can afford helicopters due to their high costs and unpredictable ongoing expenses. Helicopters can be unsafe, and using them has resulted in numerous public safety aviation-related deaths in the past decade. Additionally, they significantly pollute the environment, rivaling private jet usage and generating noise complaints nationwide. DFR 2.0 can supplement these traditional helicopter programs,

making air support more affordable, effective, efficient, safe, and environmentally friendly for every city and county in America.

DFR 2.0 AND ALTERNATIVE RESPONSE:

As DFR 2.0 systems continue to be implemented in public safety agencies nationwide, it is essential to understand how they can adapt to unique public safety challenges. With some hardware and software modifications, DFR 2.0 systems can be stationed in remote wilderness areas, rapidly detecting wildfires as they emerge. This capability can significantly decrease firefighter response times, reducing the likelihood of wildfires spreading and causing property damage or loss of life. Larger drones, capable of carrying water and fire retardants, can be operated remotely to deploy firefighting payloads onto these fires before they spread, potentially extinguishing them early enough to eliminate the need for firefighter response. This can be managed through a DFR 2.0 air traffic awareness system that prevents drones from interfering with manned aircraft operating in the same airspace.

Lastly, it's essential to understand how DFR 2.0 systems can play a role in improving our response to things like natural disasters, school shootings, and terrorist attacks by domestic and foreign adversaries.

How much more quickly could the drone have located the terrorists who killed 14 people in San Bernardino on December 2, 2015?

How many more people could we have located and rescued during our response to Hurricane Katrina?

How many children could we have saved during school shootings by locating the shooter sooner for responding officers?

How many lives could we have saved if we more quickly detected and potentially extinguished the California wildfires in 2018?

Incorporating DFR 2.0 systems into our public safety infrastructure will revolutionize how we respond to emergencies, providing faster, more efficient, and safer solutions to crises that threaten our communities. The potential to save lives, reduce injuries, and mitigate damage is immense, making the adoption and integration of these advanced technologies a crucial step toward a safer future for America.

CONCLUSION:

In conclusion, I implore this esteemed committee to acknowledge the indispensable role of DFR 2.0 in modern emergency response strategies. We must rally support for the widespread adoption of DFR 2.0 nationwide. By allocating resources to invest in advanced American drone technology and fostering collaboration among public safety agencies, federal regulatory bodies, and forward-thinking companies, we can collectively pave the way for a safer and more resilient future for all Americans.

Thank you for your attention and consideration. I eagerly anticipate our ensuing discussion and want to assure you that we remain steadfast in our mission to build this future for our first responders so they can continue to save lives.