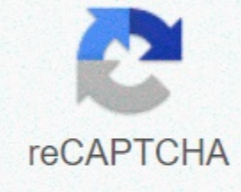




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Degraded visual environment situational awareness

Areté's top-of-the-art lidar was developed specifically as a real-time high-fidelity situational sensor for helicopter pilots working in degraded visual environments (DVEs). This custom-built, flight-tested sensor offers unprecedented 3D point density, range and continuously adjustable vision and scanning parameters. Areté's DVE Lidar uniquely captures and treats full lidar waveforms, which enable new weak target detection, obscure characterization, and rejection. Areté's DVE Lidar is designed to meet MIL standards and FAA certification requirements. Full waveform capture and processing Pulse-level dust mitigation and obscure characterization Agile, adjustable scanning pattern Wide esteem area and fast scanning rate High resolution 3D imaging Select laser pulse repetition frequency All-range, long-range detection (2 km) Compact, robust, low-SWAP design Areté's products can be custom made for you. Let us know if you want more information. FORT RUCKER, Ala. (August 7, 2017) - What does a brigadier general, a private first class, every warrant officer rank, some Marines and airmen all have in common? They all have families, friends and other soldiers who continue to mourn their loss. They are just a few of the 129 people who were fatally injured in army air accidents that occurred while operating in a deteriorating visual environment (DVE) since 2002. De most of these accidents occurred at night. We are all well versed in the limitations of our night vision goggles and how our vision is degraded compared to flying during the day. If you further reduce our visual cues with snow, dust, fog, low lighting, etc., you've seen what the result might be. That's why it's so important to focus our actions when we encounter DVE, especially at night. You might think: It's never going to happen to me. Tragically, the following is an example of a crew that probably felt the same way. Unfortunately, they were not able to overcome the challenges that are present while operating in DVE. It was a dark night. What lighting cloud cover didn't block the fog took care of. They knew it would be crappy looking, but it was only a few miles to LZ. It's freakin' darkness out here. I'm having a hard time seeing anything. Crap, I think we just banged in! What happens to your flight speed? What are you doing? Look at your position. Look at your map, you're spinning around! Z-axis plunge! It doesn't work! You take control! Watch your power! We're in a sharp turn! We're diving! Pull up, pull up! If I told you the crew that perished that night was a new pilot in command and a low-time co-pilot, your first reaction would probably be anger. Why in the world would anyone approve of the crew to fly under these conditions? I can't believe they were allowed to leave! You might even think, I wouldn't go out weather at night unless someone's life hung in a balance. If there was a pilot to carry out the mission, maybe it was you. You are a master army pilot, a standardization pilot, and have over 4000 flight hours. Even still, you'd grab the strongest co-pilot you could, the most experienced crew chiefs, and your boss would still ask you a dozen times if you and your crew were comfortable with this. Your pride would well up inside you, and you'd tell your boss, No sir, I'm not comfortable, but we have to try. We have troops in contact. They're black on ammunition, and we're their only hope. There have been times when army air traffic control has gone to extraordinary efforts to save the lives of their fellow service members. Unfortunately, the story I'm telling now wasn't one of them. We can't get angry about the bad crew mix on this one because they weren't low-time or low experience pilots. They were some of the most experienced pilots at the commander's disposal. While we mourn their loss, it was not because they risked their lives in battle to save others in great danger. They were CONUS, completing training that could have been done at a later date when the weather was suitable. This article is not intended to point out every mistake that led up to this tragic night. I would like to say to you how an experienced crew can fall victim to the dangers of operating in DVE. How many times have you made a comment to your other crew members about the crumbling weather that you looked at when you went out to the plane? Maybe the weather was legal, but it certainly wasn't ideal. You strap in, take off, and your mission is underway. Then the comments start up. It's dark as shit out here tonight. We can't even see a mile mountain with this yellow dust today. It's much foggy than what the weather called for. All of these comments are key indicators that your crew member knows your visual environment is now more degraded than it was. The question is: What are you doing about it? When a crew member comments that visibility is worse than it was earlier in the flight or worse than you expected to encounter, does it trigger anything among the crew? If I shouted to the crew, I'm accidentally left!, who would immediately alert the crew to the emergency we were in. There would be no confusion about what I am trying to communicate to the rest of my crew. There would also be no doubt about what I expect the crew to do and what they expect from me. When we encounter DVE, we usually don't think of it as an emergency. We see it as abnormal or simply not business as usual. We may not feel that the change in condition poses an immediate threat to our crew. When we communicate the change to the crew, we typically say it on a way; they can recognize the change but are not too worried. Concerned about. we've all flown in worse conditions and our plan is to just suck it up and run on. Unfortunately, many of the deaths pointed out earlier in this article are due to the flyers turning a less than optimal situation in an actual emergency; an emergency they were unable to recover from. What if we applied a level of structure when encountering a DVE in the same way we structure our actions in other emergencies? I'm not suggesting we squawk 7700 and unlock our inertia wheels, but I suggest a change in the way we scan and possibly fly the moment we encounter DVE. The cockpit recording you read earlier was a crew that made comments about DVE, never took appropriate action and allowed themselves to enter an emergency. When they were in emergency, unintentional instrument meteorological conditions (IIMC), they never acknowledged it. Had they acknowledged that they were IIMC, they would probably have taken immediate steps to ensure the successful recovery of the aircraft, crew and their passengers. However, I believe that we need to back up even further from the actual emergency. What if the dialogue went something like this. PC: It's dark as shit out here. PI: Definitely darker than I expected. PC: Okay guys, we've definitely encountered DVE. CE: Roger, Sir. DVE. PC: Okay, let's go through our scan. Attitude is good; Let's not make any quick turns or knocks. Height; I want to keep the earth in sight, so maintain that height. Headline: We've got some wires on the way. Call Chalk 2 and let them know we're getting around right. Air speed; keep it on a slow soar, go ahead and the Z-axis plunge. We're flying back to PZ. Torque; is good. Trim; you're good. Like announcing that you are IIMC, announcing that you have come across DVE draws the entire crew's attention to the change in conditions. Although it is not an emergency, going through a procedure that strengthens the pilot's scan can prevent one. It also gets the entire crew to adjust their scan and scan the pilot at the controls. As I flew over water off the coast of Honduras, I would always brief my crew chiefs to monitor the radar altimeter and warn me if I went under our set of hard tires. I knew they had as much riding on a safe flight as I did, and frankly, I appreciated the help while flying over the water. Here's the hard part. What constitutes DVE and when should I inform the crew that I encounter it? If I were to go IIMC, there is no confusion about when it happens. While another crew member may not be IIMC, I know that I am and I immediately announce it. With DVE, it can be something as subtle as increased dust in the air and visibility decreasing from unlimited down to 5 miles. You may not need to adjust your flight profile, but it is not to change the state and the subsequent review of the crew's scanning needs scanning needs Happen. If the dust picks up and visibility drops to 3 miles, announce the DVE and have the conversation again. This may sound superfluous, but I guarantee that a good pilot is already having a conversation about the reduction in visibility with the crew. Now we are just applying a procedure to the state you are already discussing. There is no main list of the conditions constituting DVE. The definition is as there are many things that can cause reduced visibility. As defined in the Capability Development Document (CDD) of THE TRADOC Capabilities Manager-Aviation Brigades (TCM-AB), degraded visual environment is defined as: An environment with reduced visibility of potentially varying degrees, where situational awareness and aircraft control cannot be maintained as comprehensively as they are under normal visual weather conditions (VMC) and which could potentially be lost. In short, when you fly together and someone in the crew or flight makes a comment about worse than expected or worsened weather or conditions you experience DVE. The reduced visibility at some level affects or may soon affect the situational awareness of the crew and/or aircraft control. It might sound elementary, but if it were, I wouldn't write this article and we wouldn't have 129 people who have died in the past 14 years with DVE as one of the conditions present. Present.

