



# FUTURE DEFINING

## Puma™ 3 AE UAS

### An ISR Platform That's Ideal for Counter-Trafficking

Charged with the challenge of tracking low-slung vessels over vast oceans, counter-trafficking forces often have to choose between stealth and search area. Now thanks to Puma AE UAS, they are discovering they can have both.

#### **Background: Traffickers Have Numbers — and Technology — on Their Side**

Borders are inherently porous, but no borders are more porous than a nation's shoreline. That is why maritime counter-trafficking operations are so difficult—and why despite best efforts, the majority of the traffickers in drugs, illegal immigrants and human beings evade detection.

There are a multitude of reasons for this, but ultimately, they come down to geography. The challenge of patrolling transit zones measuring millions of square miles of open water is daunting, especially as the transnational criminal organizations (TCOs) can field thousands of small vessels — ordinary pleasure craft and fishing vessels as well as specially built 'go-fast' boats — they can use to transport their cargo.

But the TCOs don't just have the weight of numbers on their side. In the drug trade for instance, they are turning to technology, developing self-propelled semi-submersibles and low-profile

vessels (LPVs) that are difficult to detect by radar and nearly invisible to the human eye. The challenge for the world's navies and coast guards is finding solutions that can give them an edge against the TCOs with the resources they have available.

#### **The Challenge: Improving Detection, Apprehension and Evidence Collection**

Virtually every counter-trafficking operation can be divided into three stages: detection, apprehension and collection of forensic evidence to support prosecution. Effective intelligence, surveillance and reconnaissance (ISR) is an essential component in all three.

The onboard ISR systems used by the world's interdiction fleet have a limited range, an obvious drawback in operations where stealth is a priority. The challenge is asymmetrical. Cutters and other naval vessels loom large, easily spotted by low-slung boats that are hard to detect. To be optimally effective, interdiction vessels must be able to search a much wider area and do so beyond the line of sight (BLOS).

The apprehension phase of drug smuggling interdiction is another area where interdiction efforts can break down without effective ISR.

**“We could easily see just how useful such a system could be for any future anti-piracy or counter-smuggling operations”**

*— Lieutenant Commander  
Michael Hutchinson*

# PROCEED WITH CERTAINTY

Apprehension can unfold quickly and in unpredictable ways. Quite frequently, interdiction forces lack the means to achieve real-time situational awareness that is the essence of effective command and control.

Finally, there is the issue of successful prosecution. All too often, traffickers spot their pursuers and abandon their cargoes before naval forces can make contact. Drug smugglers, for instance, often throw their cargo overboard in waterproof packages to be picked up later. Without ISR documentation, authorities often lack a conclusive way to link criminals to these abandoned cargoes.

## Solution: AeroVironment's Maritime Initiative

Over the past five years, AeroVironment has made it a priority to adapt its unmanned aerial systems (UAS) for maritime use. Many of the characteristics that have led them to be adapted by navies throughout the world make them ideal for counter-trafficking operations.

A case in point is the Puma 3 AE. Weighing in at 6.8 kg, the Puma 3 AE operates for more than 150 minutes with a range of up to 60 kilometers. AeroVironment has continually improved this third-generation small UAS, optimizing it for efficient robust flight and operational flexibility. The result: a low-cost, man-portable, easy-to-operate UAS that can be hand-launched for day and nighttime operations.

At heart, the Puma 3 AE is an eye in the sky – and one designed for flexibility as well as high resolution. In a matter of minutes, operators can swap out its Mantis™ i45 gimbaled payload, with its powerful 50x zoom electro-optical and

cameras and high-power laser pointer, for an enhanced Mantis i45 N nighttime and low-light payload. Puma 3 AE also has the option of carrying additional payloads required for specific missions.

The Puma 3 AE can deliver that superior ISR in the most rigorous conditions, thanks to its lighter, stronger airframe. Its shell construction ensures this UAS can land over and over again in salt water without any adverse effects.



*A sailor from HMCS Harry DeWolf launches a drone.  
— Canadian Forces Combat*

## The Result: Seizure of \$638 Million Worth of Cocaine

Navy's around the world are taking a close look at the Puma AE. In 2021, the Royal Navy's HMS Tamar made extensive use of Puma during successful countertrafficking trials with the Royal Marines and the Metropolitan Police. The Puma's ability to survey areas of up to 270 square miles and identify vessels of interest during a 2.5-hour sortie stood out. "We could easily see just how useful such a system could be for any future anti-piracy or counter-smuggling operations," said Lieutenant Commander Michael Hutchinson, the Tamar's commanding officer. "It's a significant enhancement of the ship's capabilities."

That same year, the Puma proved its worth as part of operation CARIBBE, Canada's contribution to the United States-led counter-smuggling operation in the Caribbean Sea and eastern Pacific Ocean. Canada's Department of National Defense had secured Pumas for the Royal Canadian Navy under a contract with AeroVironment's partner, MDA. Its goal was to enhance its sustainable shipborne, near real-time, beyond visual line of sight (BVLOS) ISR.

This capability proved crucial when the HMCS Harry DeWolf assisted the U.S. Coast Guard Cutters Hamilton and Vigilant in seizing a total of 11,800 kilos of cocaine from eight drug smuggling vessels, including a low-profile vessel, off the Pacific coast of Latin America. The cocaine was estimated to be worth about \$638 million.

Harry DeWolf didn't have a helicopter aboard – but it did have a Puma AE. A plus for Cmdr. Corey Gleason, the ship's captain: "We can operate these things day or night," he said.

Clearly, Puma is proving its worth. Quiet and compact, they are especially difficult to spot at sea, and their range, endurance and superior ISR capabilities make them ideal to enhance the detection, apprehension and evidence collecting that are at the heart of maritime counter-trafficking missions.