

Drones over French nuclear plants: what's the risk?

November 5 2014, by Marianne Barriaux And Michel Moutot



A drone flies over vineyards at Pape Clement castle, in Pessac, south western France, on September 9, 2014

French authorities have been left scratching their heads as unidentified drones zoom over nuclear plants across the country and while they pose no danger to the rock-solid structures, the mysterious phenomenon raises several concerns, experts say.

State-run power company EDF rang alarm bells last week when it announced it had filed a complaint with police after detecting the small [unmanned aerial vehicles](#) zipping over not one, not two, but seven atomic plants in October.

Since then, more have been spotted and there have been at least 16 fly-overs throughout France, usually at night, leaving jittery authorities clueless as to who is piloting these helicopter-type machines at a time of heightened vigilance in the face of Islamic extremism.

The culprit is "clearly not a hobbyist," said Elizabeth Quintana, a drone expert at the Royal United Services Institute, pointing out that hapless enthusiasts would not be flying their prized toys around at night.

"This is clearly somebody who... is either looking to spy or is up to no good.

"I don't think the size of the aircraft means it would be able to carry an explosive package that would do any great damage, but what you could do is pick up patterns of life, for instance guards walking around."

Built to withstand jet

Both Quintana and French air safety expert Christophe Naudin believe this recent spate of mystery fly-overs is probably being carried out to prove a point about nuclear security.

French law bans small, civilian drones from areas such as nuclear facilities, which are protected by a no-fly zone that spans a 2.5-kilometre (1.6-mile) radius and a height of 1,000 metres.

"It's like a cylinder placed around the plant which no flying object is allowed to penetrate. When it does penetrate, it's noted and a fine is

issued," Naudin said.



Technology journalist Tim Stenovec controls a Parrot Minidrone "Rolling Spider" during a demonstration in New York on June 10, 2014

The recent spate of fly-overs is aimed to "provoke and communicate," said the experts.

Quintana said that while this type of [nuclear plant](#) fly-over is not thought to have occurred anywhere else in the world, other facilities have been targeted in the past.

A man was arrested in 2011, for instance, on charges of planning to fly explosive-packed, remote controlled planes into the Pentagon and the US Capitol.

Nevertheless, even if they carried explosives, there is little chance the drones spotted in France—with a wingspan of up to two metres maximum—could wreak any damage to structures built to withstand the impact of a Boeing 707-type plane, a mid-sized aircraft that carries up to 189 passengers.

"Explosive charges work in a confined space—in a plane, in a train, a building—but if you make something explode outside in the open air, the effect diminishes exponentially," Naudin added.

And if ill-intentioned people decided to use larger drones with bigger explosive charges, the impact would still be much smaller than that of a plane and would therefore not damage the core structure and risk a nuclear disaster, he said.

But Naudin warned that such drones could target adjacent buildings not designed to withstand a huge shock, such as administrative offices, which would create a "psychological shock."

"That's what we need to take into account now... by installing additional devices such as radar detection systems and laser systems that will neutralise the drone before it manages to reach its target."



A nuclear power plant in Cattenom, eastern France, one of the plants overflowed by mystery drones

Shotgun pellets

Drones come in all shapes and sizes, and have a variety of uses, from widely reported military applications to surveillance, filmmaking, sports, disaster relief and scientific research.

The most basic unmanned aircraft are radio-controlled by someone who cannot be too far away, but other more sophisticated models can be pre-programmed, and these are widely available for just 350 to 400 euros (\$440 to \$500).

"All you need to programme it is a very simple application on a tablet or even a smartphone," said Paul Guermonprez, author of a recent book on drones.



People demonstrate against the presence of Israeli drone maker "Israel Aerospace Industries" at the UAV (Unmanned aerial vehicle) show on September 10, 2014 in Merignac, France

"You enter its flight plan, a series of GPS coordinates, and you let it go. You can be 10 kilometres away."

But Guermonprez pointed out that these drones were very vulnerable.

"All you need is a small shotgun pellet to touch one of the four plastic propellers and the drone will fall down"—a method that French police guarding nuclear plants have been told to use, for lack of anything better.



A Safran drone displayed at the UAV (Unmanned aerial vehicle) show in Merignac, France on September 10, 2014

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