



# Mid-air satellite retrieval

Hosting the first UK demonstration of a system to capture returning capsules as they parachute in

When leading parachute designer and manufacturer Airborne Systems wanted to demonstrate its innovative satellite retrieval system to organisations including Lockheed Martin, NASA and the European Space Agency, aviation services provider PDG Helicopters chose the MOD West Freugh Range - operated by QinetiQ under its Long Term Partnering Agreement (LTPA).

“ QinetiQ provided an excellent service. Doing this demonstration on a properly managed and maintained Range was absolutely the right call.

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Ross Waddams, PDG Helicopters

## Background

Facilities operated by QinetiQ for the UK Ministry of Defence under the LTPA are often used to support commercial projects for third party customers. In this case, PDG Helicopters needed professional Range services so its client could demonstrate innovative new technology to invited guests including Lockheed Martin, NASA, the ESA and UK Space Agency. A world leader in Entry, Descent and Landing Systems, Airborne Systems invented 3rd Generation Mid-Air Retrieval (3G MAR) technology, which is now being evaluated for various space and military applications including rocket booster recovery and satellites. “Airborne Systems and PDG hope to integrate MAR with the UK National Space Technology Programme, making mid-air retrieval of returning boosters, engines and other payloads a mainstay of the UK programme,” says Kurt Hempe, Airborne Systems. “MAR is an old idea whose time has come – and the West Freugh Range enabled us to successfully demonstrate our enhanced technique in the UK.”

“This project needed a rapid turnaround,” says Kenny Kirkpatrick, Group Leader, MOD West Freugh. “This included helping to provide QinetiQ’s Air Hazardous Activity Scrutiny Panel (AHASP) with all the information it needed, and helping to ensure we had the various competencies required to support the activity. We drew on resources and capability central to the LTPA.”



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### Unusual aerial activity

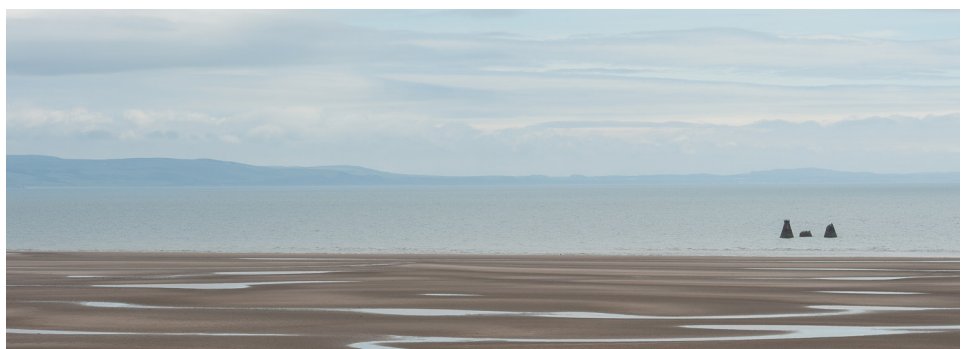
"PDG is well known for unusual aerial activities, and we were asked to provide helicopters and piloting for the demonstration," says Ross Waddams, Chief Pilot, PDG Helicopters. "We needed to risk assess the activity, the subject of airspace came up, we had discussions with the Civil Aviation Authority, and decided to do this inside a Danger Area. It wasn't really our role to locate airspace but we always work hard to do more than just provide airframes." PDG approached a range local to its headquarters, but it later declined. "The clock was ticking. We have a longstanding relationship with QinetiQ, providing helicopter services, so I approached them, and they recommended West Freugh."

Operated by QinetiQ under the LTPA, MOD West Freugh on Scotland's southwest coast was identified as a suitable option. The Range provides an Air Danger Area of 750km<sup>2</sup>, a 380km<sup>2</sup> Sea Danger Area and 12km<sup>2</sup> Land Danger Area, plus deployable instrumentation and tracking, along with secure storage for munitions, explosives and other equipment. "We put a proposal together on how to control the activity, and that was approved," says Gordon Thomson, QinetiQ Project Manager. "But we had short time scales: the demonstration was scheduled for August and the initial enquiry came in June. This activity had been done in the US but, as far as we knew, this was the first time in the UK." With three PDG aircraft and crews involved, one would drop the capsule, the second perform the capture, and the third filming HD video footage.

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“ This demonstration was a great reflection on QinetiQ as a company and what it does best, and in particular as the business continues to transform itself. QinetiQ delivered what we needed: they got it right.

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## Challenges and Solutions

### Hazardous activity approval:

"This was a novel activity, so we needed to obtain all necessary information required by QinetiQ's Air Hazardous Activity Scrutiny Panel (AHASP), which is responsible for examining activity like this," says Simon Wheeler, Trials Safety Manager, QinetiQ. "Going through that process as rapidly as possible was probably the most significant challenge, given the time scales. The panel needed to be sure who was 'owning' which elements of the activity: PDG, its end customer or QinetiQ."

### Solution:

"The hazardous activity process involved endless questions," says Waddams. "This was very useful, in that it forced us to be rigorous and make sure we had all bases covered - but the deadline was looming, the customer needed to invite its guests, and we didn't have approval for West Freugh." With time running out, PDG assured QinetiQ and other parties involved that while this was clearly hazardous activity, it was also PDG activity: "We just needed a safe place: the Range," Waddams says. "The rest was up to PDG and our customer. QinetiQ's response was, 'We can provide safe airspace and professional facilities for your activity. It's your activity, so how can we help you to make it happen?' QinetiQ got it."



West Freugh Range provides an Air Danger Area of 750km<sup>2</sup>, making it ideal for similar large scale exercises and demstrations

### Individual competencies:

Another challenge was obtaining and checking individual competencies required for the activity, within QinetiQ for the Range and confirming the competencies of, for example, the helicopter pilots, people rigging the parachutes, and so on.

### Solution:

With the team at West Freugh including a project manager, trials manager and trials safety manager, other QinetiQ personnel with notable expertise were involved in providing advice and securing approval. These included the Deputy Director Aviation, a former test pilot, along with an Air Traffic Management Advisor and the chair of the hazardous activity panel. On the day, all crews and ground personnel were briefed and knew what was expected of them, including an in-depth safety briefing by the capturing helicopter pilot covering procedures that would be followed, published time lines and more.





### Benefits

"This is commercial activity so we have to provide detailed information to the MOD and gain 'Other Works' approval," says Simon Wheeler, QinetiQ. "Our close relationship and contacts meant this was cleared fast. That's one of the benefits of a long-term partnership: you have access, and know who to call to move things on. The MOD was confident, through our LTPA relationship, that we'd take care of safety aspects. They trusted us to do it properly."

Ross Waddams of PDG Helicopters adds, "I'm so pleased we used a QinetiQ-managed Danger Area: this is absolutely core business for QinetiQ, providing Range and Test & Evaluation services, and they did a fantastic job in the way it should be done: properly. For example, on the day, the Range Controller made sure

our QinetiQ handlers moved to the back of the viewing area so our customer and guests had a clear view. He understood that a demonstration like this is as much about 'showing' as it is about 'doing'. In a commercial context, the 'showing' is so important while in a military context it's as much about the 'doing'. So I knew that professionals were in charge of the Range while we were in control of the activity, with our customer doing the briefings and controlling the drop. Working with QinetiQ was the right call, to deliver a great service to our customer. And when your guests include the ESA and NASA, you want to do it properly and make a good impression. It helps your case if you're in the right location using the right people. This was also a commercially sensitive activity, and West Freugh is very private and discreet. It wasn't national security, but it was about commercial security."

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For more information

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## The MOD and QinetiQ working together to provide Defence Test & Evaluation and Training Support Services

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