

# UAVE Limited

## Large UAVs – long flight endurance

\*\*\*\*\*NEW CONTRACT AWARD\*\*\*\*\*



April 2016

**British Antarctic Survey (BAS)** purchase two Prion Mk3 drones from **UAVE Limited** to be deployed at their science research station, Rothera, during the 2016/2017 summer work season on the Antarctic continent. The contract includes theory and drone operations training to be conducted at the company's new office facility in West Wales combined with flight operations training of a field crew for drone surveying to be conducted at the dedicated segregated drone airspace of West Wales Airfield, Aberporth.

UAVE Limited is pleased that this new award bolsters further our association with the use of the Prion aircraft for scientific surveying purposes which are anticipated to be many and varied across Antarctica. The long range flight endurance characteristic of the Prion is known to have been key to the decision process of BAS in awarding this contract. The tried and tested Prion Mk3 aircraft as presented at the 2014 Farnborough Air-show by the company MD Phillip Slater are being manufactured in West Wales with all essential aircraft components being sourced from within the UK. The application of this aircraft platform to UK offshore wind farm operations and meteorological / air quality monitoring applications is actively being pursued by the company at this time.

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### INTRODUCTION

Within the civilian market large UAVs remain scarce and only a few airframes greater than 20Kg have undergone extensive commercial service. UAVE Limited deploys the Prion Mk 3 to undertake long duration flights extending to in excess of 1000 km before landing for refuelling. This flight endurance sets aside this UAV platform as a unique offering with proven versatile payload options. We have uniquely focussed our research and development efforts from Prion Mk 1 through to the current Prion Mk 3 platform to create a large format long endurance vehicle for the civilian market place. The operational debut of the Prion Mk 3 was in 2008 at the West Wales Airfield dedicated UAV centre. With a flight endurance of 12 hours + and able to cover greater than 1000 Km between refuelling, the Prion Mk 3 weighing 27 Kg is amongst the biggest UAV available to industry. Only military equipment is routinely flown with an endurance profile exceeding that of the Prion Mk 3.



UAVE Ltd was established in 2013 in order to continue the commercialisation of the Prion which has seen commercial service flying large format geophysical surveys equipped with a Caesium Vapour Magnetometer payload. Other payloads deployed include cameras, digital data logging and transmission, GPS, satellite communications for real time in mission re-tasking of for example a flight plan, and a multitude of smaller systems. The Prion Mk 3 is configured for manual or automated take-off and landing in order that both day and night time missions can be undertaken.

Prion Mk 3. 3.8m wingspan, 3m length, 27Kg, 1000+Km & 12+ hr flight endurance, automated take-off and landing.

**UK Based Operations**

UK operations to date have been undertaken at the West Wales Airfield dedicated UAV airspace. The Prion Mk 3 has been provided with a permit by the CAA for flight operations throughout the UK. International commercial surveys in sparsely populated regions have enabled the Prion to work in extensive airspace proving the exceptional endurance characteristics of this UAV. Whilst we do not entirely discount our future development of smaller drones, the Prion is the current platform utilised by UAVE Limited and we are actively seeking new clients in new market places for this high specification UAV.

**Commercial Markets for Large Format UAVs**

- Offshore law enforcement
- Onshore border surveillance and security
- Offshore wind farm surveys
- Aeromagnetic surveying oil & gas and minerals
- Wildlife conservancy poaching deterrence
- Humanitarian aid air drops into disaster areas
- LIDAR surveying
- Meteorological/scientific instrumentation surveys



**Turnkey Service Provision**

From our UK manufacturing base in West Wales we provide turnkey solutions for clients comprising hardware, personnel and product delivery. Our current UAV airframe is the impressive Prion Mk 3 which is ready to be deployed for your observation (stills or streamed video surveillance), surveying (aeromagnetic surveys) or payload (humanitarian aid) delivery requirement. With a tricycle undercarriage or skid landing gear the Prion can launch from a grass airstrip or otherwise via a compressed gas launcher where no airstrip is available. Equipment, personnel and

local staff training are all offered in order that you can control the use of the Prion whilst we are able to ensure the system is configured correctly for your deployment requirements, and the safety of people, property and the Prion is maintained at all times.

Safety and adherence to local civil aviation authority terms of flight operations form the basis of the early planning for any new engagement. We next aim to understand any access and take off / landing limitations of the terrain at the Base Station location. The technical demands of the Prion can then be considered in order to fulfil the project requirements, whilst building in sufficient redundancy into our flight planning to allow for the safe recovery from any mission in the unlikely event of a systems or component failure.

Typical field crews will comprise a minimum of two persons. The training of client personnel is achieved through a combination of formal classroom training, structured in the field practical training sessions and on-the-job training working in a support capacity to an established field team. If a long term service provision for the use of the Prion is required, we aim to facilitate establishing and the continued support of such a turnkey arrangement.

Prion aircraft are manufactured and owned exclusively by UAVE Limited. These are subsequently leased or sold to each client project. Regular equipment Servicing provisions are offered on a contract basis which can extend to include cover at any location.



Prion Mk3 used in conjunction with a compressed air inclined launcher.

For more details visit :

[www.uave.co.uk](http://www.uave.co.uk)

**AEROMAG & PHOTOGRAPHIC SURVEY SYSTEMS AND PAYLOAD -**

## **Prion MK3 Specifications**

### **Aircraft**

Wingspan .....	3.8m
Length .....	3.0m
Weight (configured for surveys) .....	28kg (approx)
Fuel capacity .....	7lts
Fuel consumption (cruising).....	0.5lts/hr
Cruising speed (for surveying) .....	80kph
Operational range .....	1000+km
Payload.....	optimal 10 kg, maximum 15 kg
Engine.....	120cc 4 stroke petrol
Engine control.....	Fuel injection ECU
Prop.....	28x14 – 3 blade carbon fibre
Landing gear options.....	Tricycle wheels Skids with a launcher

Aircraft dismantles into components of 2m and less for transport.  
Removable front section allows easy access to onboard systems and components.

### **Control**

Autopilot system  
Groundstation with Sat-phone link for beyond horizon flight  
Real-time telemetry for aircraft, engine and data on separate screens  
Pilot’s consul for manual control.  
Real-time feedback of fuel consumption and capacity.

### **Systems**

Engine ECU controlling fuel and ignition for optimum performance in all weather.  
Engine data logged by ECU and external removable logger on continuous loop.  
Fluxgate magnetometer and GPS data recorded on PCMCIA logger (approx 1000hrs)  
Differential GPS for accurate survey positioning.  
All onboard systems accessible through a plug in USB port.

### **Electrical power**

External plug in ground power from 12v supply .....	Standby
Onboard alternator supplying 24v, 12v and 5v outputs.....	Engine running
Onboard battery with approximately 2 hours endurance.....	Emergency
Emergency battery charging system.....	Engine running