



VP-001 -Hawkeye UAV

[Join us and make a donation](#)

Vic Ferguson

The World Federation for Coral Reef Conservation

281.886.7428

P.O. Box 311117

Houston Texas 77231



1943 Isaac Newton Square, Suite 260, Reston, VA 20190, 240-577-4861



The RQQ-84 Aero Hawk lets you take control of your aerial imagery needs the Aircraft System

The AeroHawk Survey UAV has been designed for the optimal acquisition of aerial imagery. As an aircraft system it is easily assembled, tested and simply launched by hand. There is no complicated or failure-prone launch equipment. Operated by a two person crew the complete AeroHawk system packs in to two ruggedized cases, is transportable in the average utility or pickup truck and can be set up and ready to fly with 25 minutes of reaching your destination.

The AeroHawk assembled in the field, with its case behind

Once airborne it is normal operating practice for one team member to act as observer while the other operates the UAV via the Ground Control Station. The roles may vary from flight to flight or even mid-flight provided the control handover can be made safely. Normal task flight durations regularly exceed 60-70 minutes, and three flights in an average operating day is a reasonable expectation, as is a coverage area of 10-12 square kilometers at high resolution. Our emphasis is on the collection of quality raw data, so the aircraft, flight control and safety systems have been designed to be deliberately user-friendly. On top of that, Hawkeye UAV Ltd provides comprehensive operator training to a very rigorous standard that ensures the competent, legal and safe operation by all those undertaking the course. Operators also learn the best practice techniques to obtain the best data under a wide range of varying conditions. Of particular importance is adherence to the Aviation regulations of the country where the UAV is being operated. Hawkeye UAV Ltd works with these governing legislative organizations to integrate its flight operations safely and legally within



VP-001 -Hawkeye UAV

[Join us and make a donation](#)

Vic Ferguson

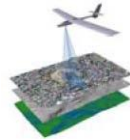
The World Federation for Coral Reef Conservation

281.886.7428

P.O. Box 311117

Houston Texas 77231

each country.



comes complete with many spares, small parts such as servos, wiring and propeller blades for example are easily sourced. Daily and routine maintenance

Assembled Ground Control Station (GCS).





VP-001 -Hawkeye UAV

[Join us and make a donation](#)

Vic Ferguson

The World Federation for Coral Reef Conservation

281.886.7428

P.O. Box 311117

Houston Texas 77231

The Sensor

The evolution of aerial photography sensors continues at a great pace, and while this is not always true of UAV mounted sensors, Hawkeye UAV Ltd has moved through a range of sensors and before arriving at the configuration which we now employ. The current combination of digital camera and lens provides outstanding quality images that translate to very sharp and high resolution orthophotos (once processed), and extremely dense point clouds from which to derive digital surface models. It is not unusual to collect over 1,000 individual images per flight and by extension sometimes in the order of 3,500 in a day of operations from a single AreoHawk system! These photographs are captured in camera RAW with no compression or loss, so this equates to a lot of data. At low altitude, relatively low speed, a short timed photo interval and with a wide camera field of view of about 70° you can begin to appreciate how much data the UAV is capturing and what a lot of overlap is achieved. Alternative sensor packages include video, Thermal Infra-Red video, Near Infra-Red photography and air quality or carbon sensors. More details on these packages can be requested.

The Processing workflow

Overlap is key to the successful processing of the imagery data. Once the images are collected, they are checked and then uploaded into the AreoGraph software along with the aircraft GPS record for the corresponding flight. The software also prompts for the input of any ground control points with known GPS positions at this point, for added accuracy. The software then conducts the first of many passes, building an accurate camera position model and developing a first-pass point cloud. The software then continues more rigorous feature-matching and data extrapolation, building a point cloud over four times denser and generating the orthophoto mosaics from only the most nadir (closest to vertical) parts of each raw photo, and thereby eliminating the parallax error inherent in standard and wide-angle aerial photography. The mosaics undergo tone-matching and color-balancing for consistency at this time also. Linear features such as pipelines, roads and railway lines are returned with an extremely consistent accuracy and mosaic joins are virtually impossible to detect.

The AreoGraph process, as with any photogrammetry manipulation, is very hardware intensive and a dedicated computer system is recommended. Hawkeye UAV Ltd processes the imagery for the majority of our clients and partners and maintains both an internal and cloud-based capability to accomplish this. Post-flight processing is a service we offer and often encourage too many, as this enables AreoHawk operators to concentrate on flying tasks and the associated preparation. All data is of course handled in the strictest commercial confidence, and the associated agreements reflect this.





VP-001 -Hawkeye UAV

[Join us and make a donation](#)

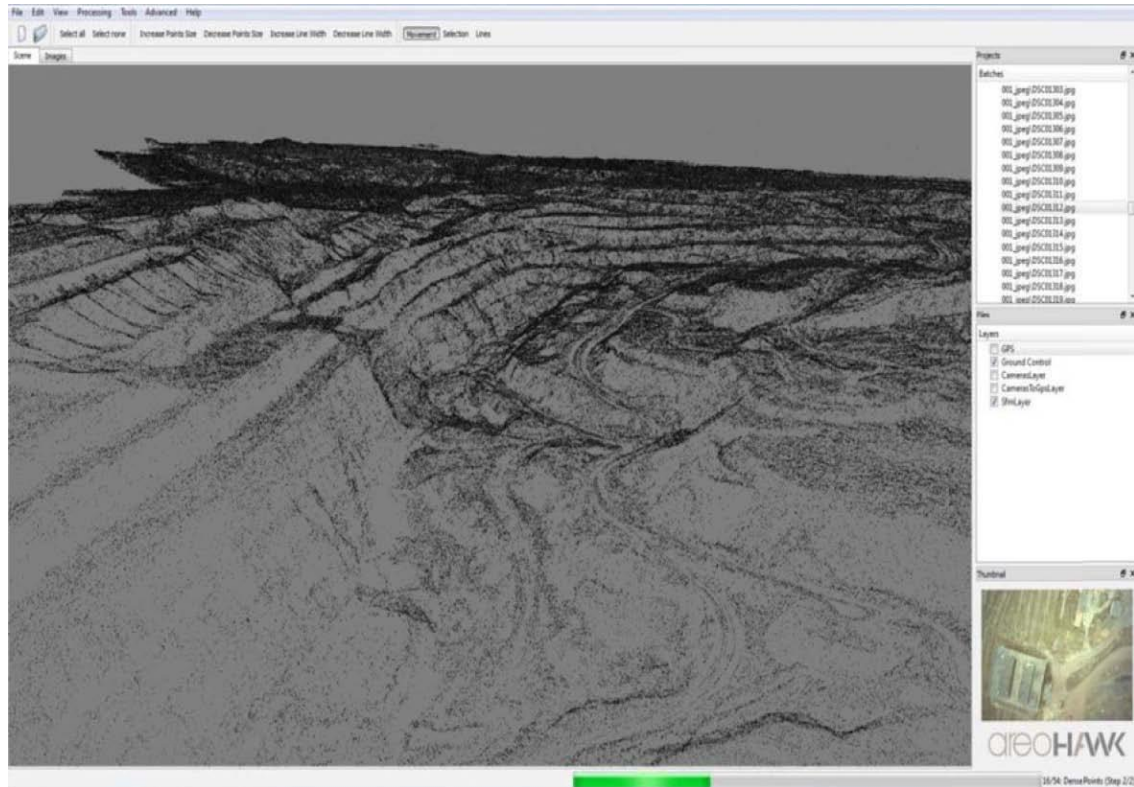
Vic Ferguson

The World Federation for Coral Reef Conservation

281.886.7428

P.O. Box 311117

Houston Texas 77231



AeroGraph software processing first-pass point cloud from 1000+ images of an open cast coal mine

The output product

At the conclusion of the AeroGraph processing, which may take from one day to several depending on the number of images, you will have output in the form of tiled orthophotos ((as GeoTiffs in your desired coordinate system), a summary ortho (a single, lower resolution GeoTiff of the entire scene), and the dense point cloud (as a text file, .las or any of a range of formats by selection). Orthophoto products can be used by any GIS or CAD system and the range of point cloud options allows the same or very simple conversion too TIN, ESRI Grid or other raster terrain data types. The orthophoto mosaic output resolution is very high at sub--5cm pixels.

For construction, engineering, mining and other precision forms of survey we can produce very spatially accurate contours at 100 or 20cm intervals, as well as detailed volumetric analysis for your project. All these products are greatly enhanced by the perfectly rectified orthophotos, which underpin the results of any three-dimensional survey.



VP-001 -Hawkeye UAV

[Join us and make a donation](#)

Vic Ferguson

The World Federation for Coral Reef Conservation

281.886.7428

P.O. Box 311117

Houston Texas 77231



Mosaicked orthophotos draped over point cloud derived terrain model

Expectations

The RQ-84Z AeroHawk UAV is a complete system designed to accurately survey small through to relatively large areas by means of high resolution aerial photography and three-dimensional point cloud data. The system is safe, efficient and cost-competitive in comparison to traditional aerial photography, helicopter-borne sensor operations and terrestrial survey. The AeroHawk's long flight duration, low altitude of acquisition, wide-angle capture and low speed stability make it a leading edge photogrammetry and survey tool.

The staffs at Hawkeye UAV Ltd are knowledgeable, experienced and dedicated to supporting all clients and customers. Our background in aviation and our operational certification from the New Zealand Civil Aviation Authority (CAA) permit our legal commercial operation in New Zealand. In conjunction with our Australian partners we have the same certification from the Civil Aviation Safety Organization (CASA) for Australia.





VP-001 -Hawkeye UAV

[Join us and make a donation](#)

Vic Ferguson

The World Federation for Coral Reef Conservation

281.886.7428

P.O. Box 311117

Houston Texas 77231

Where required we will guide you in your integration with Aviation legislation in your home country, and best practices for safe operation if you become an AeroHawk operator. Ongoing mentoring, advice and

Frequently Asked Questions:

1. How much does it cost?

That depends on configuration and quantity. Contact us for the complete pricelist including multiple configuration options and spares.

2. How long before our aircraft is ready?

Within 90 days. Typically 5-6 weeks from payment.

3. Does it come with the processing software?

On request. The AeroGraph software is optimized for the onboard sensor and gives the best results with our technology.

4. How does the GPS ground control work?

Ground control is required for survey grade acquisition. Ground control markers are incorporated during processing workflow. Differential GPS locations can be taken post-flight provided markers are visible in photography.

5. Can I buy just the airframe and use my own autopilot?

No.

6. We have our own GIS or photogrammetry processing software, why do I need yours?

The AeroGraph software is optimized for the onboard sensor and gives the best results with our technology. Note that most industry photogrammetry processes do not support wide-angle lens configurations and the large number of images captured during our operations.

7. Can you process the imagery and data for us?

Yes absolutely! Many customers do not see the need for the photogrammetry processing burden to be conducted in-house.

8. Instead of buying the aircraft can we simply subcontract you to do the work for us?

Yes! Either Hawkeye UAV Ltd or one of our international partners is more than likely able to perform this work for you.

9. If I buy the aircraft can you operate it on our behalf?

Yes! As per Question 8. Where geographically suitable, Hawkeye UAV Ltd or its partners can be contracted to operate your UAV system.

10. What's the flight endurance?

60-70 minutes of image capture time, not including takeoff and recovery (up to 90min air time).

11. What sort of range can you operate to?

The UAV is capable of operating out to very long distances, but typical usage sees it operating within a 3-5km radius. Pipeline surveys and the like can be conducted easily with the appropriate planning.



VP-001 -Hawkeye UAV

[Join us and make a donation](#)

Vic Ferguson

The World Federation for Coral Reef Conservation

281.886.7428

P.O. Box 311117

Houston Texas 77231

12. I'm not a pilot, will I be able to fly it?



VP-001 -Hawkeye UAV

[Join us and make a donation](#)

Vic Ferguson

The World Federation for Coral Reef Conservation

281.886.7428

P.O. Box 311117

Houston Texas 77231

Yes! We provide comprehensive operator training to a very rigorous standard that ensures the competent, legal and safe operation by all those undertaking the course. 13. I'm a pilot, will I be able to fly it? Will I still need training?

Yes! Flying experience is of great benefit however as with any new aircraft type, a type rating and training for this specific industry will still be required.

14. Our tasks are in mountainous areas or at high altitude, will it work there?

Yes! The AeroHawk has undergone extensive test-flying and operations in such environments.

15. Don't I need some kind of launcher or catapult?

No.

16. Do I need to operate from an airfield?

No. The only requirement is some clear area for launch and recovery

..