

OSCAR™ Oil Spill Cleanup and Response Sensor

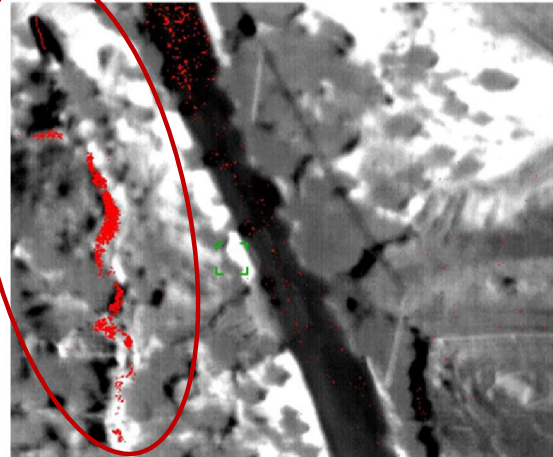


OSCAR Gen-3
First Flight
February 2023



- Pyxis® Polarimetric LW Infrared Imager
 - New optical zoom lens enables high altitude, large area coverage
- Co-Boresighted Optical Imager
- Rapid reporting built-in
- Compatible with conventional aircraft, AiRanger BVLOS UAS, and small electric drones
- **OGI configuration 2023**

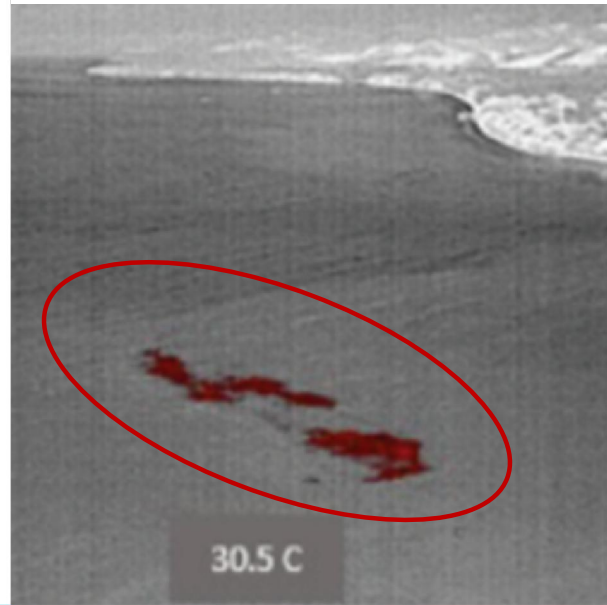
Liquid Hydrocarbon



Optical Imager



Imagery from OSCAR Gen-2 Prototype



SWaP / Specifications

SWaP has been minimized as much as reasonable while also keeping full-rate production and the payload capacity of the intended target SUAS platforms in mind. The mass and proportions of the Pyxis® with zoom lens drove most of the design considerations, namely the shape and size of the fairing, the size of the motor drives, and the general component layout. Upon understanding the size and weight of the payload internals it was clear the payload would substantially transcend the low payload capacity copters in the 1-2.5lbs range, therefore giving the green light to utilize larger motors and an aerodynamic shell in order to maximize the usefulness of the payload for potential applications other than SUAS.

OSCAR 3.0 Production Prototype Unit Intended Specifications (SWaP)

Length	7.80 inches 198 mm
Width	5.99 inches 152 mm
Height	8.74 inches 222 mm
Ball Diameter	6.50 inches 165 mm
Weight	~4.5 lbs +/- 0.25lbs
Input Voltage	21.8V - 25.4V
Power	<50W Typical at 24V input, Maximum 110W Peak
Weather	Alt Up To 14,500ft MSL 0-90% Humidity 0-60C Temp
User Controls	Pan Tilt Roll Zoom Gimbal mode + Standard Polaris Payload Functions
Inputs / Outputs	Micro USB 1 (Connection to Pixhawk) Micro USB 2 (Gimbal Programming / Debug) 2x UART (External GPS / External Serial Radio) Power In (21.8V - 25.4V) Micro HDMI (Video Out) USB 3.1 (Removable Thumb Drive) RC in (SBUS / PWM / Spektrum)
Control Options	Serial Radio Direct USB PWM SBUS Spektrum Sat UART
Payload Mounting	Payload Mounting Holes 2.36 Inches 60 mm Square Note: Universal Damping Mount attaches to these holes. Typical mounting of the payload will be done using the Universal Damping Mount
Construction	Hybrid Aluminum & Composite Monocoque

OSCAR Report

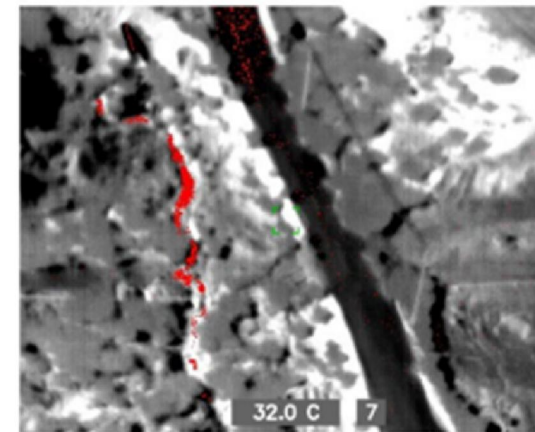
Drone Serial Number: 7774

Date and Time: [REDACTED] UTC

GPS Location: [REDACTED]

GPS Altitude: 432 m MSL

GPS Heading: E



Pyxis Image



Visible Image

Reference: Infrared Polarimetric Sensing of Oil on Water, Chenault and Vaden, Marine Technology Society Journal. Volume 52, Number 6, Nov/Dec 2018