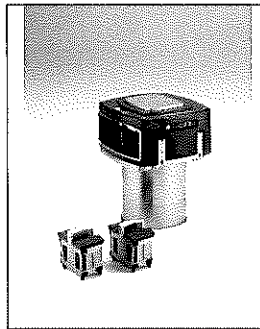


Camera Geometric Verification Certificate  
No: DMC III 27550



For

**Peregrine Aerial Survey, Inc**

#201 2555 Townline Road  
Abbotsford, British Columbia V2T 6E1

Canada

DMC III 27550 Geometric  
Verification

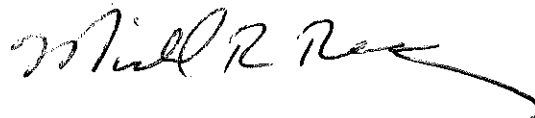
Camera: DMC III 27550  
Manufacturer: Leica Geosystems Technologies, D-73430 Aalen, Germany  
Reference: PAN  
Serial Number: 00126502 (PAN Head)  
Date of Calibration: 06 July 2018  
Date of Report: 22 July 2021  
Number of Pages: 6

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This camera system is certified by Leica Geosystems Technologies and is fully functional within its specifications and tolerances.

Date of Calibration: 06 July 2018

Date of Certification: 22 July 2021



Dipl.Ing. Christian Müller, Product Manager

Michael Reading, Customer Support Consultant

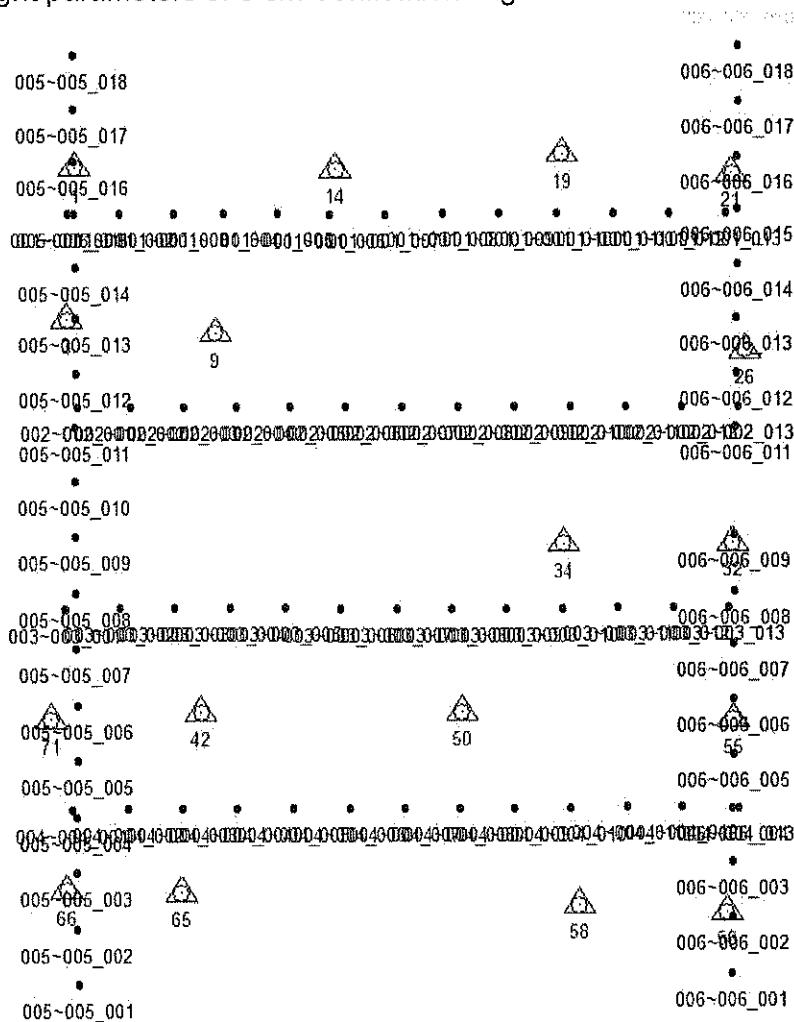
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# Camera Serial Numbers and Burn-In flight

Camera Head	Serial Number	Calib. Date
PAN (reference)	00126502	06.07.2018
MS1 (NIR)	00128786	06.07.2018
MS2 (Blue)	00128804	06.07.2018
MS3 (Red)	00127981	06.07.2018
MS4 (Green)	00128807	06.07.2018

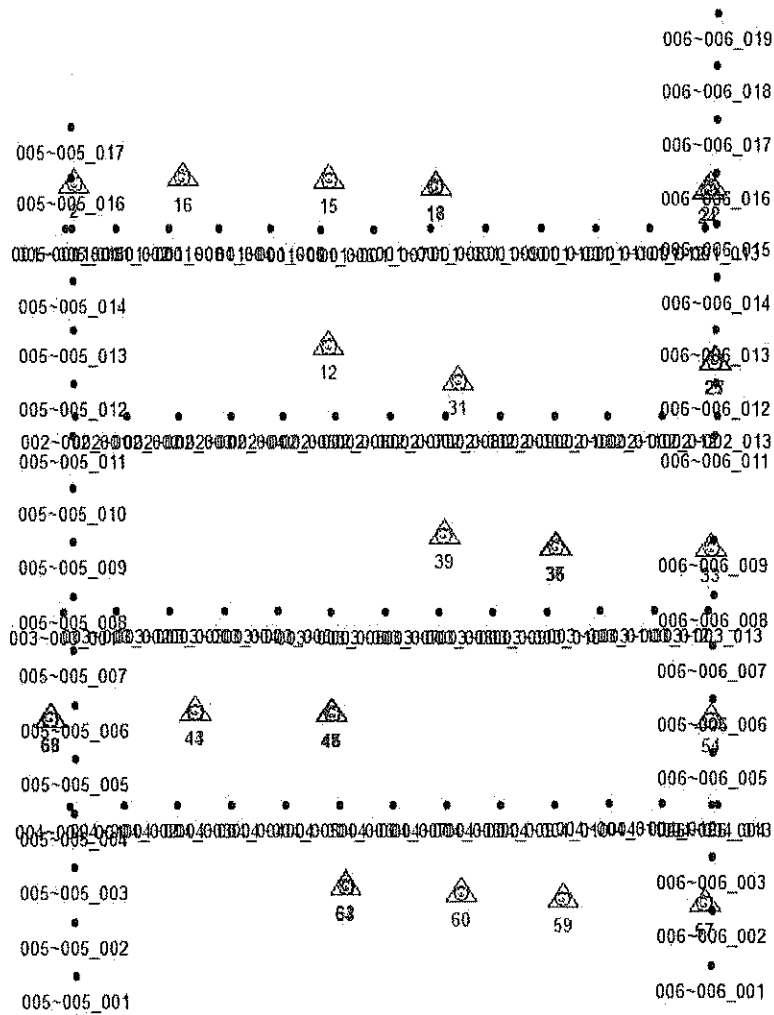
## Verification flight performed: 11 July 2021

Flight parameters of 5 cm Verification Flight - Control Points



DMC III 27550 Geometric  
Verification

Flight parameters of 5 cm Verification Flight - Check Points



Parameter	Validation Flight
GSD (cm)	5
End-lap (%)	70
Side-Lap (%)	40
Number of Exposures	89
Number of Flight Lines	4
Number of Cross Flight Lines	2
Number of Control Points	17
Number of Check Points	31
GNSS / INS	Yes

### Application

Parameter	Validation Flight
Weighting for manual measured image points (um)	3.0
Weighting for automatic measured image points (um)	3.0
Weighting for Control Points (m)	0.100 / 0.100 / 0.100
Weighting for GPS (m)	0.50 / 0.50 / 0.50
Weighting for INS (deg)	0.01 / 0.01 / 0.05
Modeling of GPS systematic residuals	YES
Bore Sight Alignment (YES/NO)	YES
Camera Self Calibration (YES/NO)	NO

### Statistics – Bundleblockadjustment

Parameter	Validation Flight
Sigma0 [ $\mu\text{m}$ ]	0.71434
Mean Std Dev Photo Position [m]	0.02316/0.02226/0.01223
Mean Std Dev Photo Attitude [deg]	0.00082/0.00117/0.00044
Mean Std Dev Control Points [m]	0.01217/0.01163/0.02804
Mean Std Dev Check Points [m]	0.02289/0.02414/0.04716
RMS Photo Position [m]	0.07710/0.08054/0.03662
RMS Photo Attitude [deg]	0.00216/0.00192/0.00176

### Statistics – Results from independent reference measurements

Parameter	Validation Flight
RMS of Control Points - horizontal [m]	0.01918 / 0.02837
Max Ground Residual of Control Points - horizontal [m]	0.02932 / 0.05874
RMS of Control Points - vertical [m]	0.02852
Max Ground Residual of Control Points - vertical [m]	0.06260
RMS of Check Points - horizontal [m]	0.02255 / 0.02419
Max Ground Residual of Check Points - horizontal [m]	0.05004 / 0.06245
RMS of Check Points - vertical [m]	0.04627
Max Ground Residual of Check Points - vertical [m]	0.11848

DMC III 27550 Geometric  
Verification

The results of the aerial triangulation were generated with ImageStation Automatic  
Triangulation (ISAT) version 16.6.0 Build 618, from Hexagon Geospatial.

Aerial Triangulation performed by  07.22.2021  
Michael Reading Date