Camera Geometric Verification Certificate
No: DMC III 27550

For

Peregrine Aerial Survey

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

Canada

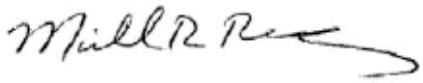
DMC III 27550 Geometric
Verification

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:	21 May 2024
Number of Pages:	5

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: 21 May 2024



Dipl.Ing. Christian Müller, Product Manager

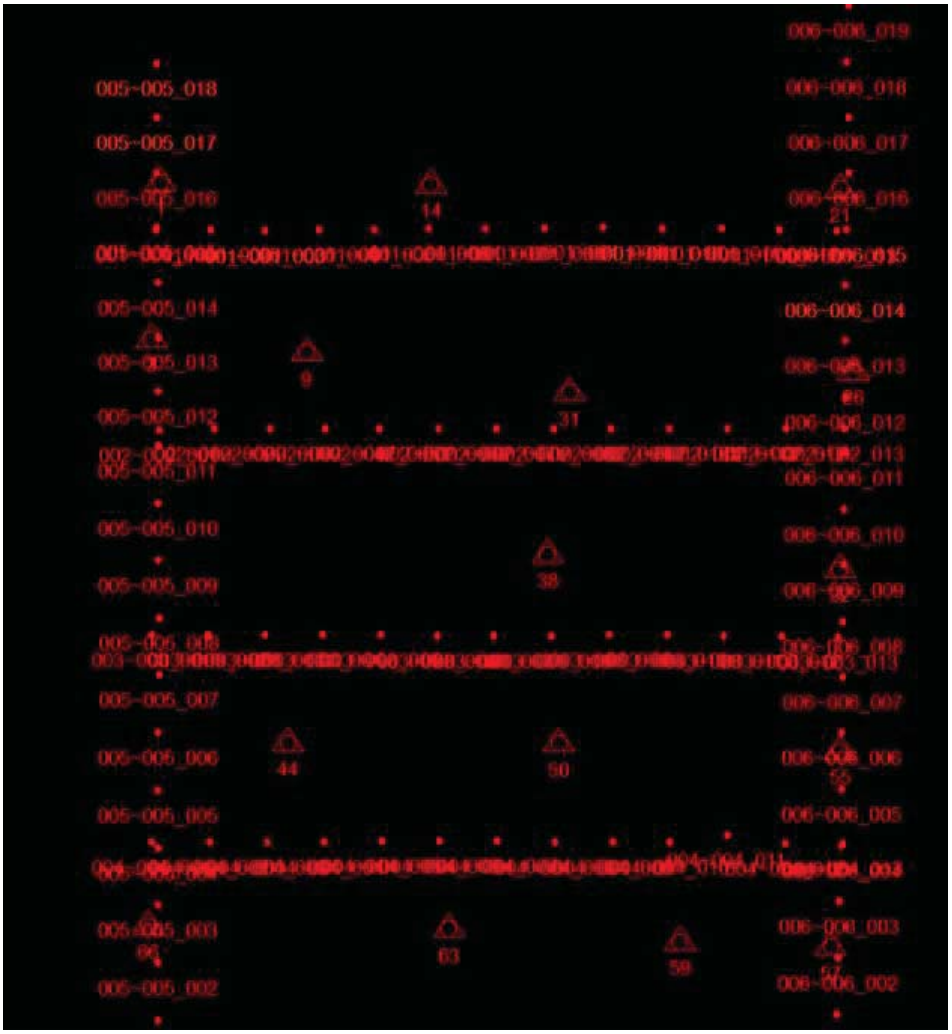
Michael Reading, Customer Support Consultant

Camera Serial Numbers and Burn-In flight

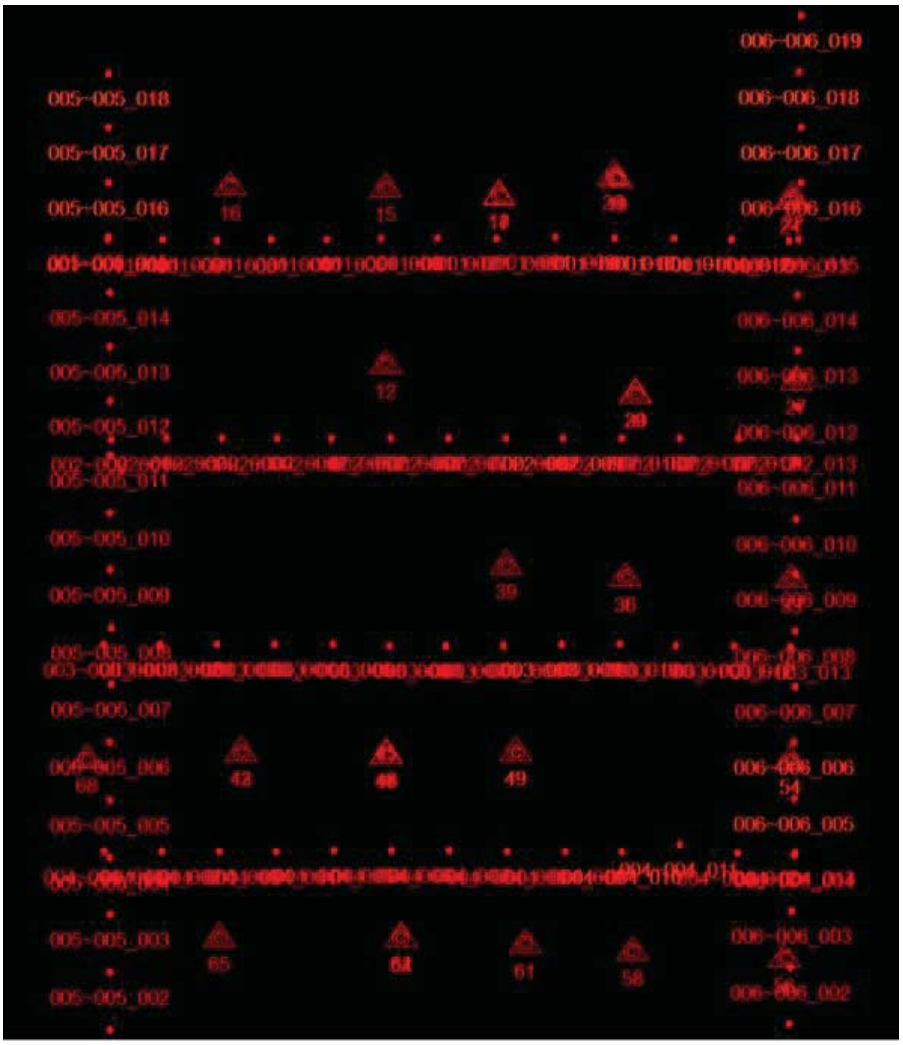
Camera Head	Serial Number	Calib. Date
PAN (reference)	00126502	06.07.2018
MS1 (NIR)	00128786	06.07.2018
MS2 (Blue)	00128804	06.07.2018
MS3 (Red)	00127981	06.07.2018
MS4 (Green)	00128807	06.07.2018

Verification flight performed: 15 May 2024

Flight parameters of 5 cm Verification Flight – Control Points



Flight parameters of 5 cm Verification Flight – Check Points



Parameter	Validation Flight
GSD (cm)	5
End-lap (%)	70
Side-Lap (%)	40
Number of Exposures	88
Number of Flight Lines	4
Number of Cross Flight Lines	2
Number of Control Points	16
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)	0.100 / 0.100 / 0.100
Weighting for INS (deg)	0.010 / 0.010 / 0.020
Modeling of GPS systematic residuals	YES
Bore Sight Alignment (YES/NO)	YES
Camera Self Calibration (YES/NO)	NO

Statistics –Bundle Block Adjustment

Parameter	Validation Flight
Sigma0 [µm]	0.74639
Mean Std Dev Photo Position [m]	0.01907 / 0.01846 / 0.01142
Mean Std Dev Photo Attitude [deg]	0.00078 / 0.00094 / 0.00047
Mean Std Dev Control Points [m]	0.01080 / 0.01030 / 0.02642
Mean Std Dev Check Points [m]	0.03392 / 0.04602 / 0.04352
RMS Photo Position [m]	0.03094 / 0.03395 / 0.01792
RMS Photo Attitude [deg]	0.00162 / 0.00204 / 0.00215

Statistics – Results From Independent Reference Measurements

Parameter	Validation Flight
RMS of Control Points – horizontal [m]	0.03839 / 0.04774
Max Ground Residual of Control Points – horizontal [m]	0.06731 / 0.09212
RMS of Control Points – vertical [m]	0.03860
Max Ground Residual of Control Points – vertical [m]	0.07707
RMS of Check Points – horizontal [m]	0.04025 / 0.04527
Max Ground Residual of Check Points – horizontal [m]	-0.08853 / 0.09860
RMS of Check Points – vertical [m]	0.04978
Max Ground Residual of Check Points – vertical [m]	0.09358

The results of the aerial triangulation were generated with ImageStation Automatic Triangulation (ISAT), 2022, Version 16.8.0, Build 215 from Hexagon Geospatial.

Aerial Triangulation performed by _____ 21.05.2024
Michael Reading Date