

# Camera QC

## FREQUENTLY ASKED QUESTIONS

### 1) WHAT DOES CAMERA QC DO?

Camera QC can calibrate the angular misalignment between the IMU and the image sensor (camera). The boresight parameter are three angles which are required to produce proper direct geo-referencing data for the images. Beside this, Camera QC can also calibrate the camera parameter such as PPA and focal length. In addition, Camera QC can be used as a Quality Control tool. In order to check the ground accuracy a subset of the image block can be loaded along with a few Ground Control Points (GCPs) or Check Points (CPs). Camera QC would return the RMS values and a detailed quality report which can be used for internal and external purposes.

### 2) IS CAMERA QC AN AERIAL TRIANGULATION (AT) SOFTWARE?

No, it is designed for calibration purposes, not for large image block adjustments.

### 3) DO I NEED GROUND CONTROL POINTS (GCPS) FOR CAMERA QC?

No, not necessarily. For boresight calibration only you don't need any GCP's. However, if camera parameters are also calibrated it is required to load GCP's. It is recommended to have one GCP in each corner of the image block plus one in the middle. While this is not absolutely mandatory it provides good redundancy for the calibration process. GCP's would also help to resolve potential datum defects. Turning some of them into check points would allow to verify the absolute accuracy on the ground after the calibration process and hence deliver feedback about the direct geo-referencing performance.

### 4) WHAT ARE TIE POINTS?

Tie points are connecting images and strips. These are identical points found in multiple images being measured. Tie points of higher quality are points that connect strips, not just images within one strip. Ensure the connection between the strips has good redundancy.

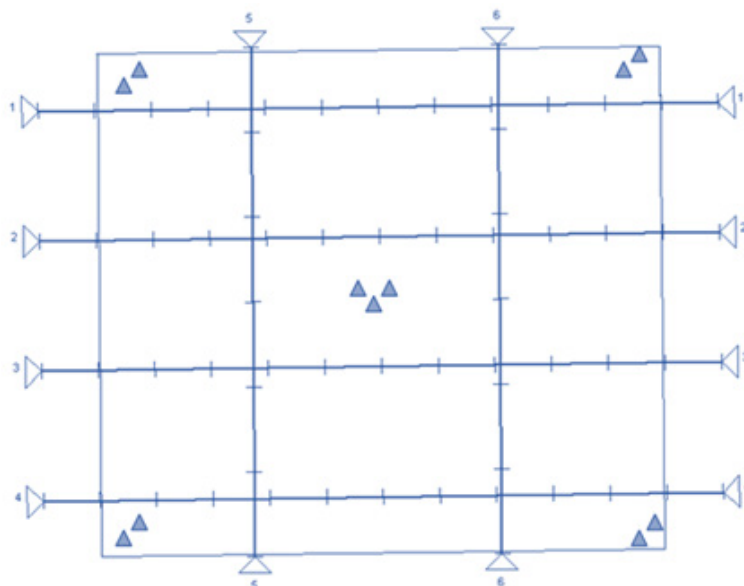
### 5) CAN I IMPORT TIE POINTS GENERATED BY ANOTHER SOFTWARE?

Yes, there are multiple formats supported, for instance the PATB file format.



## 6) WHAT IS A GOOD BORESIGHT FLIGHT PATTERN?

Flying 4 strips east-west and two perpendicular strips with decent overlap (70/40) is typically sufficient. Please refer to the technical note about the boresight flight pattern for more details—can be requested from [techsupport@aplanix.com](mailto:techsupport@aplanix.com). Find below the suggested strip arrangement:



## 7) CAN I ESTIMATE THE DATUM SHIFT?

Yes, XYZ translation parameter can be floated and estimated. At least one GCP is required to estimate the datum shift. The Z datum shift shall not be floated if focal length is estimated at the same time due to correlation issues.

## 8) WHAT ARE THE INPUT FILES/INFORMATION FOR CAMERA QC?

- ▶ SBET file
- ▶ PhotoID File
- ▶ Images (raster files)
- ▶ Camera parameter
- ▶ GCP's and/or Check Points
- ▶ Event file

## 9) I DO HAVE IMAGE PYRAMIDS FROM ANOTHER SOFTWARE. CAN I USE THEM?

Likely not. Please use raw image format and run the pyramid creation in Camera QC.



## 10) WHAT IS THE “AVERAGE GROUND HEIGHT” USEFUL FOR?

Providing the average ground height is important for the tie matching success rate. Looking at the height of the GCP's should give you the average ground height.

## 11) HOW DO I KNOW THE RESULTS FROM CAMERA QC ARE ACCEPTABLE?

Look at the boresight RMS. They should be matching the angular specification of the system being used (e.g. POS AV510, AVX-210, etc.). Another check sits with the RMS at the GCPs or Check Points. Typically you can expect 1 pixel horizontal error and 3 pixel vertical error, still depending on camera stability and the POS AV/APX product being used.

## 12) HOW DO I APPLY THE CALIBRATED BORESIGHT VALUES IN MY FUTURE PROJECTS?

You can save the boresight angles in a template in POSpac. Each time you create a new project you simply open up this template and the angles will be applied. Alternatively, you can enter them from the report manually in the settings before you run the Exterior Processor in POSpac. Should you have camera calibrated values you will need to enter them in the photogrammetric software you are using for further image processing.

## 13) WHAT CAMERA MODELS ARE SUPPORTED IN CAMERA QC?

There is a wide variety of standard cameras supported such as UltraCam sensors from Vexcel or PhaseOne cameras. Other large format cameras or medium format cameras are also supported and can be created as custom camera models by the user.

## 14) CAN I EXPORT THE ADJUSTED EO PARAMETER FROM CAMERA QC?

Yes, that is supported.

## 15) CAN I GET A DETAILED CALIBRATION REPORT WHICH IS SHARABLE WITH MY CUSTOMER?

Yes, Camera QC can print the report in different formats. The report would contain all statistical parameters such as number of images, tie point quantity, boresight angles and various RMS values.