

Aerial Survey Report

SIRDI Drainage Project



Belize

Feb-August 2018

Compiled by



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1. Introduction

The sugar industry in Belize is a vital component of Belize's economy in terms of employment and exports. The industry is concentrated in the rural areas of the Corozal and Orange Walk Districts of Belize. Despite forming an integral part of the local economy Sugar yields in Belize are significantly lower than those in neighbouring countries. One of the major constraints on yield is inadequate drainage in low lying areas where most of the sugar cane is planted. Improving drainage is expected to positively impact yield in the region. A drainage master plan needs to be developed but for this to go forward it was important to conduct a topographic survey of the region for designs to be conducted on.

In February 2017 the Cardno consortium was contracted by the European Union Delegation in Jamaica, on behalf the Government of Belize and the Belize Sugar Industry Development and Research Institute (SIRDI), to undertake a detailed aerial survey to develop a detailed drainage master plan of the Belize sugar belt. The Terms of Reference are presented in Appendix 7. The two required outputs specified in the ToR were:

- A topographic map of the area of interest
- Electronic data set and combined data layers for preparing relevant elevation models (DRM/DEM) for the use later in the GIS modelling

The aerial survey was subcontracted by Cardno to Agri-Sense, an aerial survey company specialised in the surveying of land planted to sugar cane. Agri-Sense were tasked with surveying 90 000 ha (900 km²) of sugarcane area in Orange Walk and Corozal districts of Belize. The specific Area of Interest (AIO) was split into 13 different blocks for ease of operations. The survey was completed from the south and towards the north with the last block surveyed at Corozal. The survey was undertaken from February to April 2018, corresponding with the dry season in Belize.

The Agri-Sense personnel undertaking this work were split into 2 teams with the overall operation and logistics being controlled by the Agri-Sense GIS Engineer Expert/Team Leader Russell Longhurst.

This report contains all the information of the site activities and processes completed for all the survey work done on site including the data processing , post processing and final results.

1.1. Site location

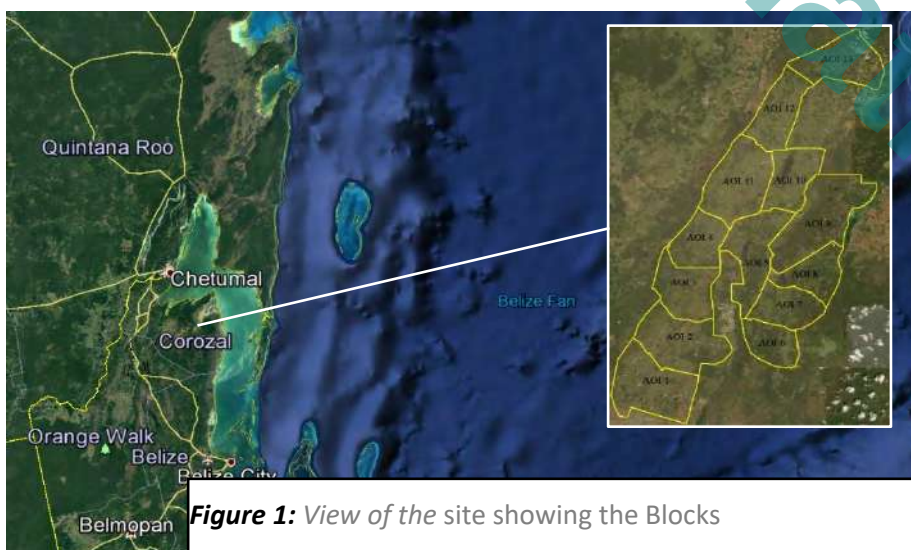


Figure 1: View of the site showing the Blocks

2. Terms of Reference Overview and Deliverables

The terms of reference are stated as the following:-

Very high-level accuracy topographical data:

This imagery is to cover an approximate area of 900 km², which might be sub-divided in several smaller, but often adjacent areas, consisting of a refined area of agriculture; the identified Areas of Interest (AOI) within the sugarcane cultivation area / lowland savannah / shrub land. These Areas of Interest which will form the approximate area of 900 km² was identified by the other EU framework contract entitled "Consultant to Conduct Land Use Management and Drainage Master Plan Study" around September 2017.

2.1 Terms of Reference

To obtain the high-level accuracy topographical data, an airborne survey with Terrestrial Ground control is required.

This included the following:

- **Airborne survey**
Photogrammetry/LiDAR survey to collect XYZ data of terrain level at X,Y,Z resolution of 15cm (XY) and 10cm (Z) respectively.
- **Ground Control:**
Establishment and survey of ground control and benchmarks, to achieve desired accuracy of the topographic survey. All field works related to the acquisition of Ground Control Points (GPS)/benchmarking and the use of ground stations during the flight survey to guarantee the requested absolute accuracy must be conducted by the contractor at its own cost. Data will be adjusted to the national coordinate and height of Belize. Costs must be show separately in the offer.
- **Data processing**
to produce topographic survey outputs (see deliverables below).

2.2 Required output

The following products are to be delivered for the defined 900 km² project area(s):

- **Geometrically corrected Point Cloud data (Las1.2):**
 - o classified in ground and non-ground; percentage correctness: 99%
 - o Point density is fixed according to the vertical and horizontal accuracy requested.
 - o RMSE for the vertical accuracy (10 cm) and the RMSE for the horizontal accuracy (15cm)
- **Digital Terrain Model (DTM) and Digital Elevation Model (DEM)**
 - o Derived from the Point Cloud ground data.
 - o Grid 1 m cell size in LAS (ESRI) format based on the mean value from the ground points in each grid cell
 - o 25cm contours lines in ESRI format

- **Ortho-photo mosaic in GeoTiff with following specifications:**
 - o Visible RGB colour
 - o Resolution of 10cm/pixel GSD
- **Mission Report**
 - o Detailed daily activities and data,
 - o Quality control reports
 - o Digital PDF copy of the image in 300dpi A0 size.

Agri-Sense International

3. Mobilisation, Personal and Logistics

A Project of this size required 2 multi-disciplined teams, a Ground survey team and an Aerial survey team.

3.1 The Ground Survey Team

The Ground survey Team consisting of David Gilfillan and Nicholaus Huchzermeyer with support from the Cat 1Expert, Russell Longhurst, arrived in Belize on the 6th Feb 2018. This team placed all the ground control pre-marks (GCPs) on the ground preceding the Aerial Survey Team.

The team performed well and achieved the daily target. The team worked for a total of 23 days placing GCPs throughout the various blocks, 5 days measuring road levels, and 5 days remarking the GCPs that were washed away from the excessive rain. The team completed the Ground phase on the 17th March and demobilised on the 18th March 2018.



Figure 2: The Ground survey team placing the GCPs.

3.2 The Aerial Survey Team

The aerial survey team consisting of Michael Cohen and Ross Walters arrived in Belize on the 13th Feb 2018.



Figure 3: The UAV team operating the equipment from their operation centre in the field

The team started the aerial survey on the 14th Feb and used 2 x C1 Cumulus UAVs to survey the area and covered an average of 3900ha a day. The team spent 28 days surveying, 4 days were down time due to rainy weather, 3 days down time due to CCA permissions, 4 days downtime due to equipment malfunctions. The equipment malfunction resulted in part of the team having to leave site on the 9th March to fix the equipment. The team returned to site again on the 10 April and completed the site works on the 26th April. A total of 106 000 ha were surveyed which included the overlapping of the areas and some additional re-flights needed due to bad weather conditions.



Figure 4: View of the sugar cane fields spread throughout the site showing issues with cloud shadow

4. Ground Control and Geo-Rectification

Ground control and geo-rectification involves marking and measuring numerous points across the survey area to improve the accuracy of the elevation model to survey grade. Points were marked on the ground using Agricultural Lime that were visible in the imagery captured by the UAV. Each point is measured with a survey grade Trimble PPK GPS. The survey is first initialised for 8 minutes prior to measuring, an additional 1-2 minute per point is then measured to establish absolute accuracy.

When the UAV data is processed, the GPS survey data is added to geo-rectify the model to survey grade accuracy.

A total of 1552 points were measured with total of 5 Base stations being used, an additional 138 water level points and 582km of roads were measured. See Appendix 5



Figure 5: Placement and measuring of the Ground Control Points



Figure 6: Measuring the water levels



Figure 7: Placement of the GCP's with Lime and plastic

4.1 Survey system and equipment

The Survey Team used 2 set of Trimble R4 PPK GPS units. See Appendix 1 for specifications. A single Base station was setup and 2 roving units were used to capture the GCPs. All GCPs were captured within a 15km radius of each base station. If points were to be measured outside this radius, a new base station was setup and new radius established.



Figure 8: Trimble R4 smart base station and rover

4.2 Survey and Setup.

The entire survey was done on a local grid using the world geodetic system (WGS84) datum and projected in UTM 16N. For the height system a geoid model EMG96 was used. Base station 1 was the initial setup point. The base was left to run for 12 -14 hours before its precise location was established through Post Processing using Trimble RTX (Appendix 2). This process was repeated for the first week until a full cluster of points were established. These points were then compared to each

other to find out the mean error and establish the final coordinate for the point. Standard deviation for the different points was less than 1cm.

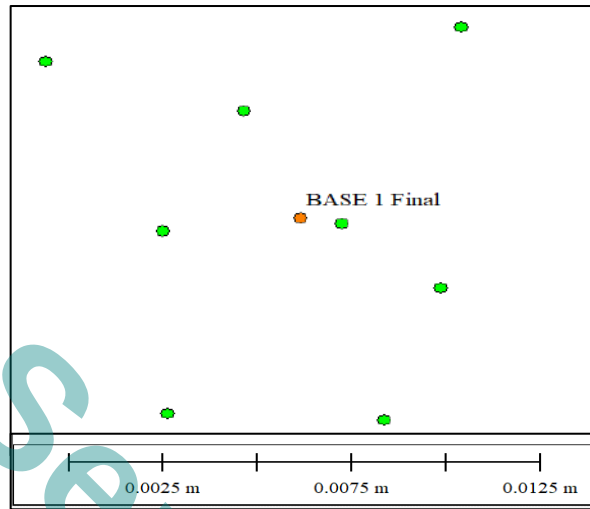


Figure 9: Image showing base scatter distribution to be within 1cm

5 base stations were then established across the site to ensure sufficient coverage for all the GCPs. All the base stations were cross checked and referenced back to Base 1.

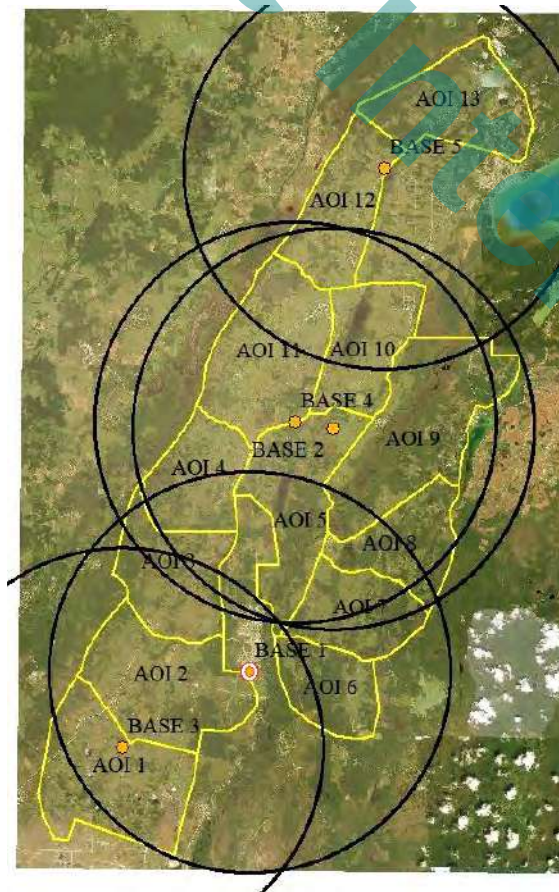


Figure 10: Image showing the Base station locations

4.3 Permanent Ground control points

Throughout the site local permanent ground control points were established at each base station. A steel rod Y10 standard 40cm long was driven into the ground, 30cm depth of soil was excavated in a 30cm diameter circle, this void was filled with concrete and the reference number scribed into the top of the benchmark. The steel peg was left protruding no more than 1cm above the concrete. This permanent benchmark was used to setup each base station.



Figure 11: Example permanent control bench mark

4.4 Height Transformation

The original datum established for Belize is the Sibun Gorge Datum of 1922 where the astronomical coordinates of the origin are: $\Phi_0 = 17^\circ 03' 40.471''S$, $\Lambda_0 = -88^\circ 37' 54.687''W$, and the ellipsoid of reference is the Clarke 1858 where: $a = 6,378,293.645 \text{ m}$, $1/f = 294.26$. The Colony Coordinates used the datum origin for the Transverse Mercator projection with a scale factor at origin of unity, a False Northing = 445,474.83 ft, a False Easting of 217,259.26 ft, and the unit of measure is where 1 meter = 3.28086933 Jamaican feet. Another datum known to exist is called the Jesuit College Flagstaff, probably being the origin for a local hydrographic survey. With aerial photography flown in 1969 and 1972, a series of 1:50,000 scale topographic maps were produced by the British Directorate of Overseas Surveys (DOS). The coordinate reference system currently used in Belize is the North American Datum of 1927. The available 1: 50,000 scale maps of Belize on the NAD27 are over-printed with the UTM Grid. According to TR 8350.2, the three-parameter datum shift for Central America including Belize From NAD27 To WGS84 is: $\Delta X = 0 \text{ m} \pm 8 \text{ m}$, $\Delta Y = +125 \text{ m} \pm 3 \text{ m}$, $\Delta Z = +194 \text{ m} \pm 5 \text{ m}$, and is based on a 19-point solution in 1987.

Only 2 national DOS were found in the area of Orange Walk town. These were measured with the Trimble R4 and the coordinated were compared to those supplied to Agri-Sense. See below



Figure 12: Image showing DOS beacon locations

DOS 237, was directly underneath a large tree and seemed to have been disturbed slightly by the roots, whilst DOS 238 was at the top of a small hill and did not seem to be disturbed. Both DOS beacons showed a shift in the X, Y & Z axis.

Table 1: DOS beacon shift from said position to actual measured position

Name	X shift	Y Shift	Z shift
DOS 237	16.274	209.12	1.474
DOS 238	16.18	209.19	1.493

Agri-Sense were supplied a DSM and Orthomosaic of the whole project area by SIRD. This data was from the first set of high-resolution satellite data. A comparison of some known ground points and water levels in both X Y and Z were done to find the variance between the 2 data sets. The X & Y were very accurate with no measurable shift. When comparing the elevation values there was an average of 0.4m variance on some known established ground points. From this comparison, there is a better alignment between the satellite and the Agri-Sense data.



Figure 13: Comparison of the Satellite and UAV imagery for X&Y placement

During the exercise of comparing the satellite DSM to the Agri-Sense measurements, there were some local errors that were quite evident which could cause some issues with the final drainage design. As few of these are seen below

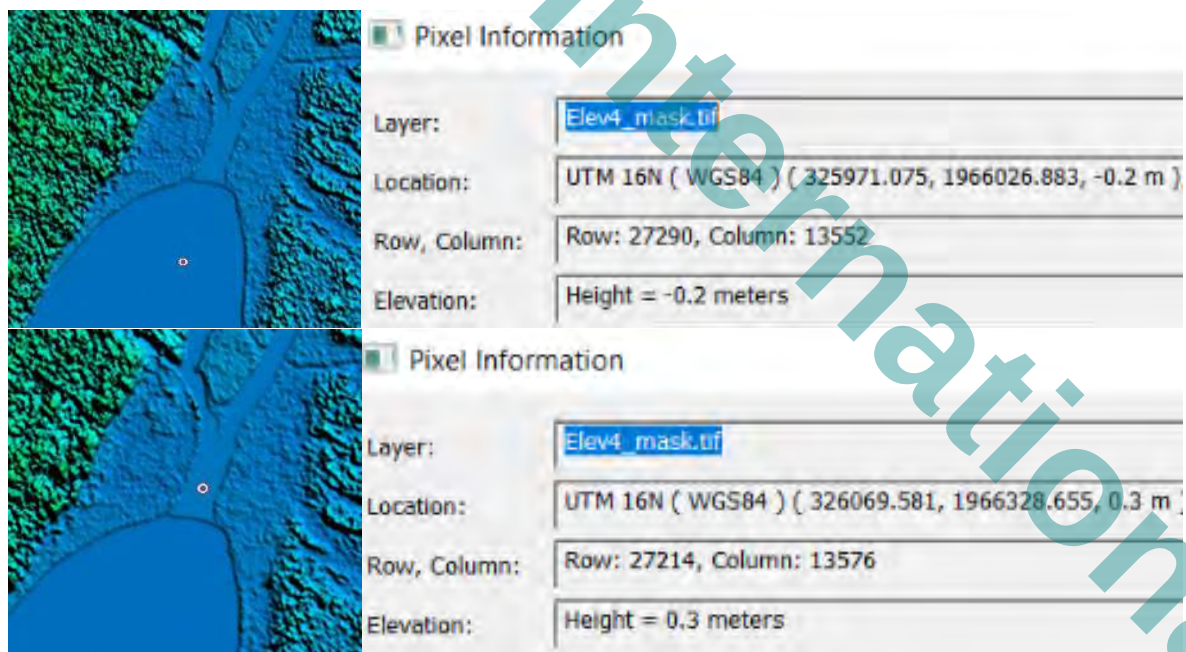


Figure 14: Indicating the water level errors experienced 74km upstream.

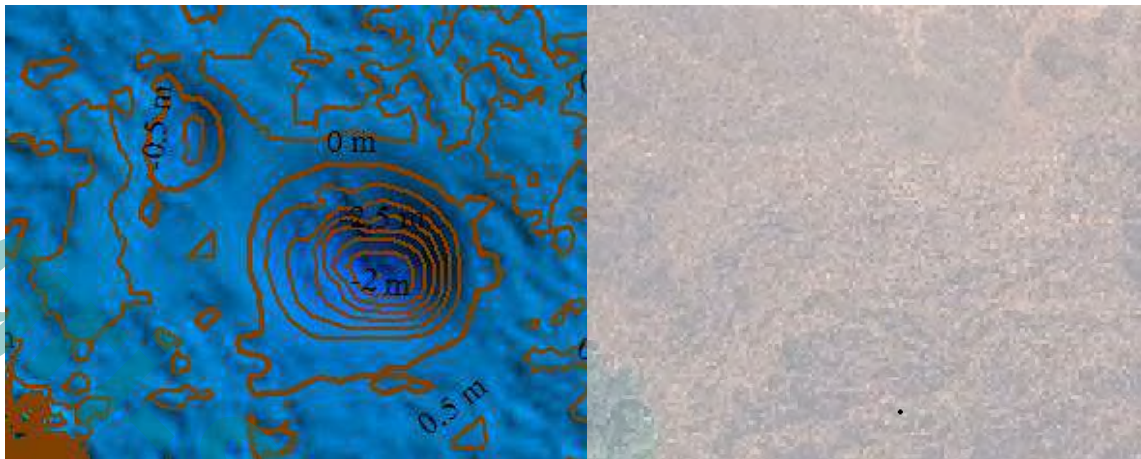


Figure 15: Localised hole appearing with negative elevation values with no clear observation on the ground.

To ensure continuity between the data sets Agri-Sense are confident that the levels taken during the Survey are correct and correspond to the satellite data within tolerance and will use the Agri-Sense levels without transforming to the DOS beacons. As the survey was done independent of the other control beacons, transformation can still be processed if deemed necessary at a later date.

4.5 Ground & Weather Conditions

February 2018 was one of the wettest Februarys on record, the first 2 week saw rain falling every day over different parts of the site. The rainy conditions hampered progress and resulted in some of the control points being washed away and having to be remarked. To prevent the GCPs washing away an increased amount of lime was used, and towards the end Plastic strips were used in conjunction with the lime. See Figures 5&7 above.

5. Aerial Survey

The final areas for the Aerial survey was confirmed on site with the SIRD Team, the total AOI was 90 000 ha. The AOI was divided into 13 different blocks strategically placed throughout the site. See below

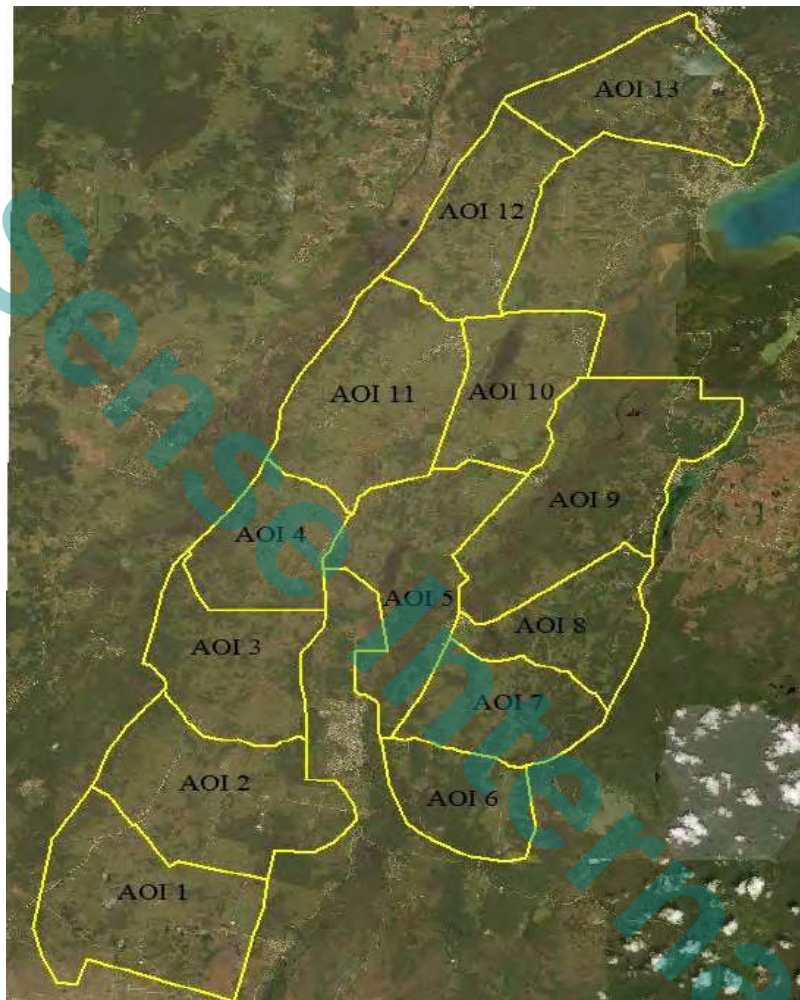


Figure 16: Block locations within the AOI

Flying commenced on the 14th February 2018 and was finally completed on the 25th April. There were some weather delays during the first week of operation followed by delays with permissions from the Department of Civil Aviation (DCA) Belize. SIRD Team organised the media to be present to witness the first launch. After the initial setup procedures, the operation got underway at 10:30.

5.1 The Equipment used



Figure 17: The QX-1 Camera alongside the Sky-Watch Cumulus C1 UAV

The UAVs used for the project were two the Sky-Watch Cumulus 1, long range UAVs. Each Cumulus UAV was fitted with a Sony QX-1 lens camera. The Cumulus UAV is capable of flight times of up to 1h40m which combined with the high resolution QX-1 camera can cover up to 1200ha in a single flight at 10cm. The cumulus UAVs long flight times are made possible by their construction out of carbon kevlar. Their flight is controlled using a custom version of the Mission Planner software as well as an on board pixhawk flight controller.

The QX-1 is a high resolution, 19.8 Megapixel camera (5456 x 3632 - above 4K) that can be triggered by the Cumulus UAV autopilot (flight controller). The QX-1 battery supports the camera for approximately 500 photos.

A target Ground Resolution of 10cm was achieved by maintaining an average altitude 380 m above mean ground level. The entire area was flown in 106 flights from 14 take-off and landing locations and required 28 days of flying time.

5.2 Weather and Ground conditions

Atmospheric Conditions were mostly partly cloudy with most days seeing 5/8 cloud cover. Wind conditions ranged from 7-10m/s during the day and effected the flying performance of the aircraft, which resulted in less coverage per day. The first week saw excessive rainfall and resulted in a stoppage to operations. The resulting weather conditions hampered progress but were acceptable to continue operations.



Figure 18: Ross Walters and Mike Cohen with the 2 Cumulus 1 Long Range UAVs ready for launch

Finding suitable soft-landing sites for the UAV was difficult due to the lack of soft vegetation and resulted in some damage to the UAV's. It is suspected that this continual hard impact caused some electronic components to progressively fail which led to the equipment malfunction.

A total of 9892 images (77,5 Gigabytes of data) were captured over the area of interest. Flights were programmed to capture imagery with an overlap of 70% side overlap and 75% frontal overlap to enable a high degree of accuracy.

6. Data Processing

Data processing is done in 2 main stages. The first stage is the Raw data processing, this is the “stitching” of all the raw photographs together and generating a 3D point cloud. The result is an orthomosaic map (ortho Photo) and a digital surface model. The second stage is to process the point cloud & (DSM) further. The process involves classifying the point cloud into ground and non- ground points allowing us to extract a Digital Terrain Model (DTM). During both processes there are several quality control checks that are completed to ensure data continuity and accuracy. See Figure 19 below



Figure 19: High level overview of processing workflow

6.1 RAW Processing

The raw processing is broken into 4 steps to ensure the accurate results are produced. See Figure 20 below.

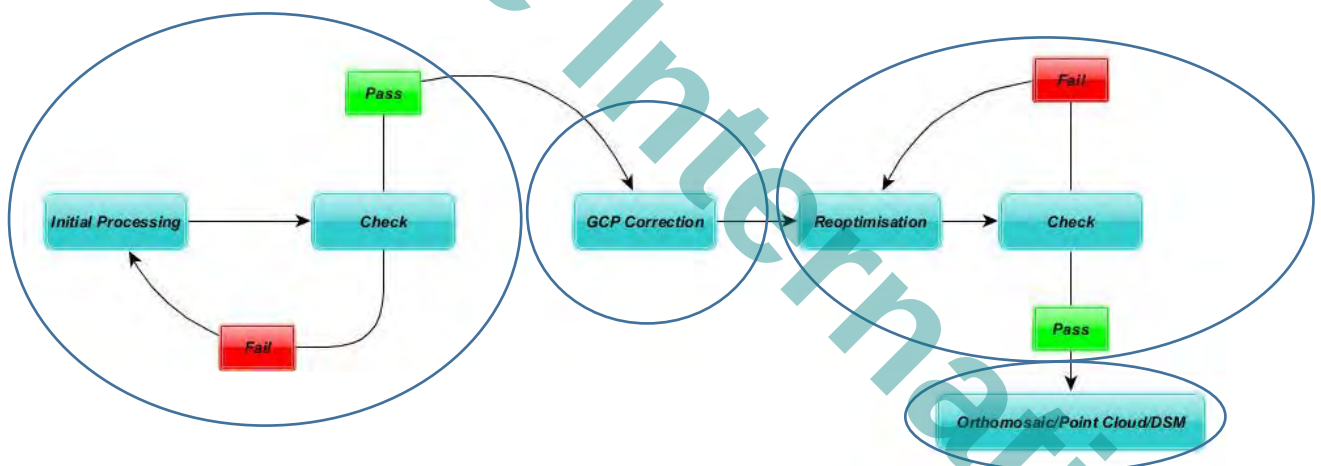


Figure 20: Overview of initial processing steps

Processing of flight data was done using Pix4D photogrammetric software.

The **first** stage of processing is the “Initial Process”, this is where all images are matched, and checked for accuracy. A basic relative elevation model is also produced.

The **second** stage it to add the ground control to the results from the initial process and correct the elevations to the ground control points. This is to establish how accurate their matching is relative to the surrounding images, along with their elevations and the visibility of the ground (Clarity).

For the **third** stage, Re-optimisation and re-matching are carried out until the results are acceptable. At this stage a simple point cloud is generated. Checks are carried out to ensure the accuracy of the point cloud in relation to the ground control.

The **fourth** stage of processing is to generate a densified point cloud followed by the actual generation of the map image and the surface model. A summary of the processing results is shown in Table 3 below.

Table 2: Processing Variables Averaged across all blocks

Processing Variables	Average Value
Time taken for Initial Processing	2d
Orthomosaic/DSM Generation	3d
Average ground sampling distance	10.3cm
Key points per image	50301.13
Image Calibration	4016 of 4059 Images calibrated (99%)
Camera Optimisation	2.116%
Matching	Median of 14830.99 per image
Geo-referencing	Mean RMS error of 0.661m
Area Covered	7183ha

The key points per image are well above the recommended minimum of 10 000, with 99% image calibration (some non-detrimental image errors). Camera optimisation for all blocks was excellent and well below the 5% maximum. Matches per calibrated image are very good, well above the 1000 acceptable minimum at over 14000 matches.

Geo-referencing (RMS) error is not a measure of the accuracy of the results. It is a simple display of how the imagery was conformed to the GCPs, to improve the accuracy of the map.

The geo referencing (RMS) error across the entire project for the initial processing, was approximately **60cm**. This Geo-referencing RMS error the difference between the initial image position and the corrected image position with the ground control added.

It is important to note that georeferencing value is derived from the average error adjustment. If the geo-referencing results are vastly different from the initial, i.e. 20m plus, then this would have an impact on the accuracy of the results and thus the geo-referencing (RMS) error is within acceptable limits.

Quality reports are generated at the end of step 1 and are attached in Appendix 4 with an explanation of terms in Appendix 5.

The overall quality of the Raw data processing was better than expected and conformed to the specifications.

6.1 Post Processing

During the data processing, the point cloud generated consists of 3D points with XYZ values. These points are a representation of how the actual ground/vegetation look, this is known as an unclassified point cloud. See Figure 21 below. Where vegetation is present above the ground level, points are captured for the surface of the vegetation and where penetration occurs these points are captured at ground level.

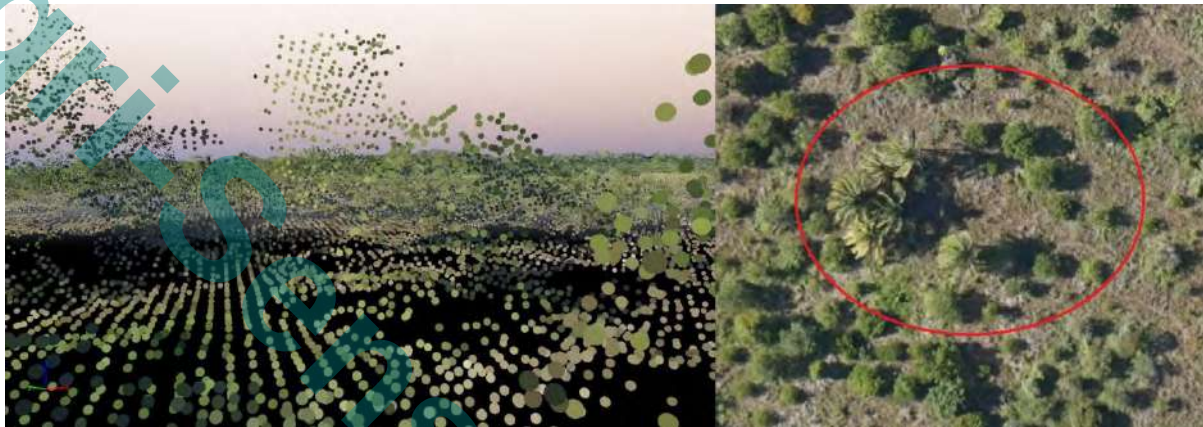


Figure 21: Sparse 3D point cloud compared with orthomosaic

This unclassified point cloud is gridded to form a Digital Surface Model (DSM).

Once a surface model had been constructed, DSM to DTM (Digital Terrain Model) automated processing is used to classify the point cloud into ground and non-ground points such as buildings, crop canopy & vegetation, and remove noise. See Figure 22 & 23 below

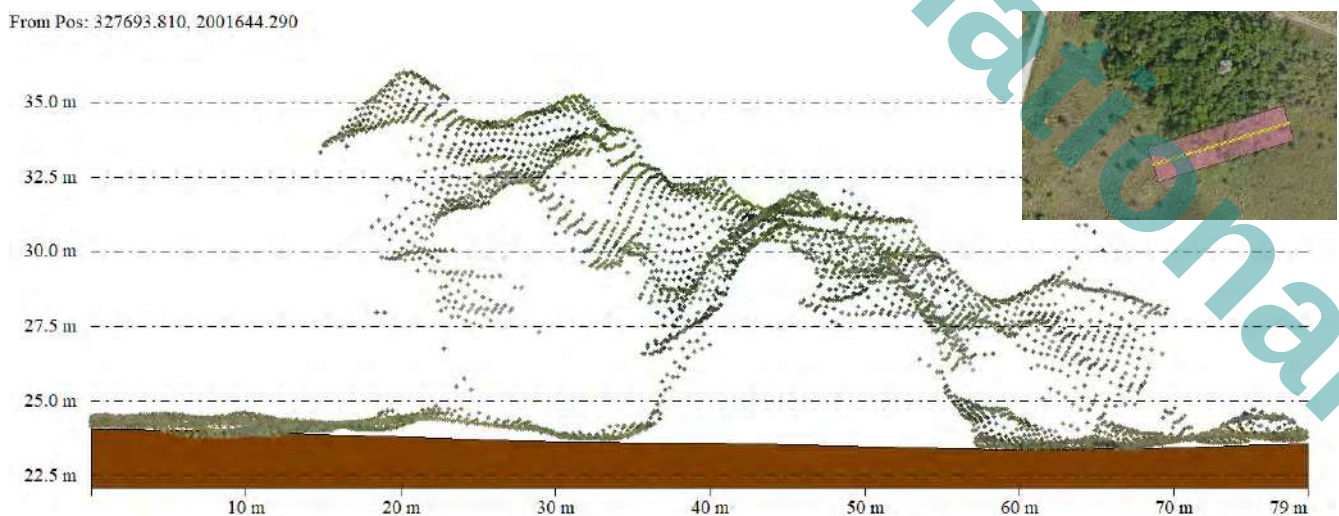


Figure 22: Point cloud showing Ground and Non-Ground points

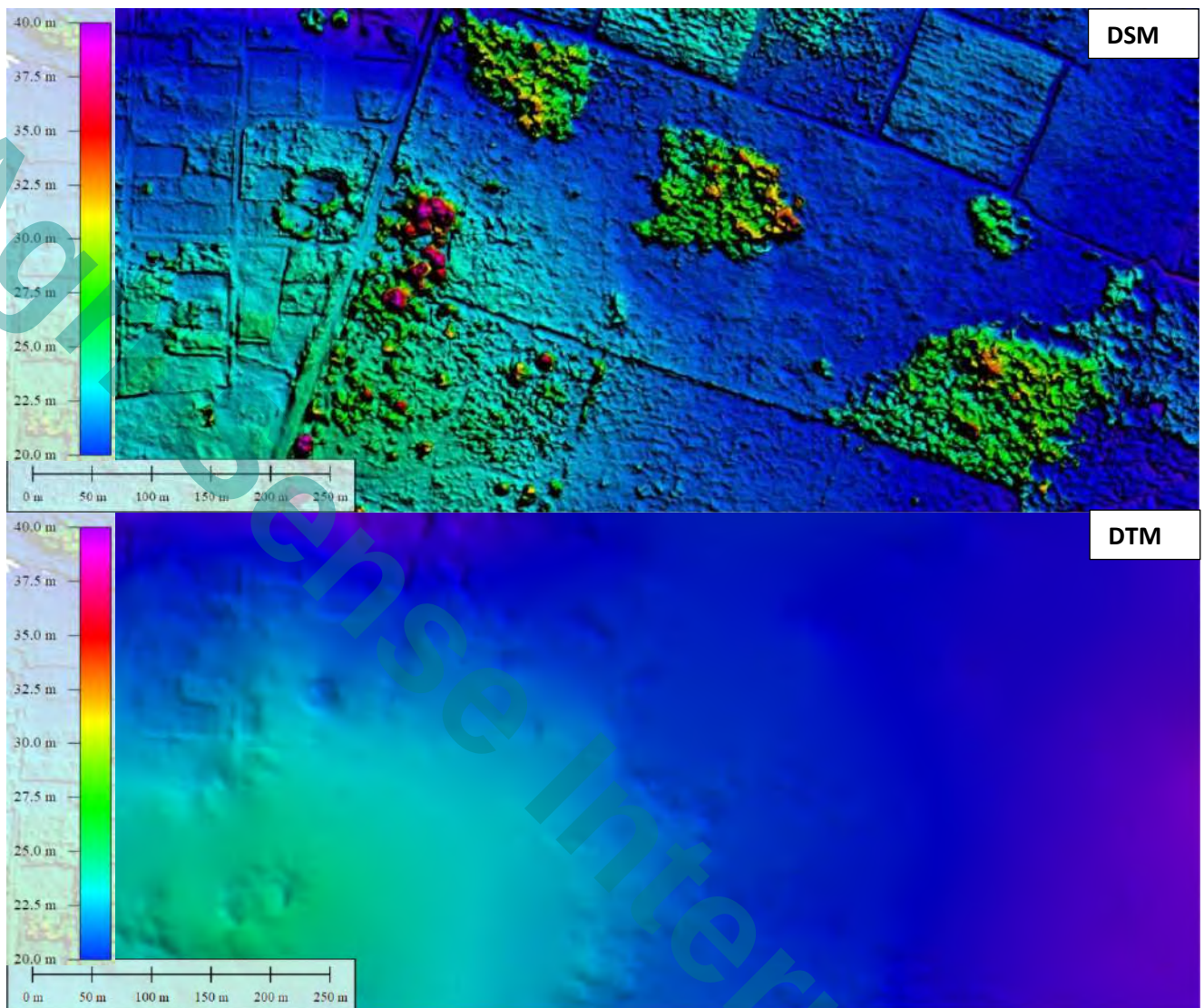


Figure 23: View of the DSM and DTM showing the vegetation and noise removal

PCI Geomatica software is largely used to conduct the post processing. The DSM2DTM algorithm was used as part of the semi-automated process. The algorithm distinguishes ground from non-ground points by searching for features where the user defined average gradient is exceeded over a certain distance. From this result a variety of different settings were used depending on the terrain and vegetation density in each block.

In Figure 23 above it is clear where there are ground points identified below the palm and beneath the surrounding trees which would form the basis of the DTM for this section. Each point within the point cloud not only contains the X, Y & Z value but also contains the pixel colour value which enable us to produce a true representation of the actual ground condition in an orthomosaic map.

See Figure 24 below



Figure 24: Oblique view of 3D point cloud

6.2 Final Result Quality Checks

Whilst on site, the Ground control team were instructed to take several readings throughout the site on the road levels - see Figure 25 Below. These points were used in conjunction with the GCPs to check the correctness of the final DTM after post processing. With the GCPs, as they were evenly spaced throughout the site, the DTM elevation was added to each spatial point and then these points were exported with both original & DTM height and checks conducted to calculate the standard deviation error on each point. The table below shows the summary of these points and the full point list in Appendix 6

Table 3: Summary or quality check

Total number of points	1747
Mean RMSE Error	2.73 cm
Standard Deviation	4.56 cm

A Root Mean Squared Error (RMSE) of 2.73 cm was calculated across the entire site which falls well within the accuracy requirements listed in the terms of reference.



Figure 25: Map showing surveyed area with roads with additional points

7. Summary

Despite a few minor challenges with the UAV, and weather on site, the field work went very well. The friendliness and hospitality shown, as well as the willingness to work late hours by the teams, meant that the work was done very efficiently, and with a high level of morale. The Data processing yielded accurate results which allowed for the post processing to be done effectively. Due to the variability of the vegetation and crop canopy heights, additional time was needed on the post processing to ensure the results generated were a true likeness on the ground conditions. During the Quality control process several blocks were re processed to remove excess noise and height differences outside the tolerance. The final DTM accuracy is 2.73cm RMSE in comparison to the GCP, and the vertical precision of the GCPs is 2.7cm thus a total error of 5.4cm.

As a result of the work the 90,000 ha project area (see Figures 16 and 25) was surveyed and detailed topographic mapping data generated for the full area. The deliverables included: a geometrically correct point cloud; a Digital Terrain Model (DTM) and Digital Surface Model (DSM); an orthomosaic (Visible RGB) and a digital PDF of the imagery. This data was supplied to SIRD I on a Hard Drive Disk (HDD) as well as through iCloud access. The data complied with the specifications and data formats required in the ToR (see Table 4 below).

Table 4: Table of TOR specifications and results

Deliverable	Specification	Data Format	Status/Comments
Geometrically Correct Point Cloud	Classified into ground/Non-Ground Vertical Accuracy: 10cm Horizontal Accuracy: 15cm	LAS 1.2 at 1m grid spacing. Tiled for improved data loading times.	Delivered at under 5cm vertical/horizontal accuracy.
Digital Terrain Model (DTM) and Digital Surface Model (DSM)	Gridded at 1m resolution with accuracy of 10cm.	GeoTiff files at 1m grid spacing	Delivered at under 5cm accuracy
Orthomosaic (Visible RGB)	10cm pixel size with 15cm horizontal accuracy.	Enhanced Compression Wavelet (.ecw) compressed at 1:1 and tiled.	Delivered 10cm Pixel size at under 5cm vertical/horizontal accuracy.
Digital PDF of Imagery	300dpi at A0	PDF	Delivered

Appendix 1

Trimble R4 GNSS GPS

Specifications

Trimble R4 GNSS system

Key Features

Trimble **R-Track satellite tracking** technology

Includes **Trimble Maxwell 6** chip with 220 channels

Scalable from postprocessing to VRS to multi-constellation RTK configurations

Cable-free for convenience

Accurate, reliable and rugged system

Trimble **Slate controller**



Dependable When every point Counts

Designed for surveyors looking for easy-to-use GNSS technology, the Trimble® R4 GNSS System performs under even the most rigorous conditions. GNSS support upgrade options, integrated Trimble R-Track™ satellite tracking technology, and a straightforward system design result in a system that is flexible, reliable, and rugged.

a complete GNSS system

Lightweight, convenient and cable-free, the Trimble R4 GNSS system with Trimble Access™ field software provides the ease of use of an integrated receiver and everything you need to perform a basic survey campaign.

The dual-frequency antenna enhances tracking capacity and delivers sub-millimeter phase center stability for precise results in demanding conditions. Internally powered with removable batteries, this system provides a full working day of uninterrupted field operation.

advanced Trimble r-track technology

The Trimble R4, powered with a Trimble Maxwell™ 6 chip with 220 channels, delivers the accuracy and reliability required for precision surveying with superior tracking and RTK performance. With GPS L2C and the Japanese QZSS support included, you can track more satellites and measure more successfully in challenging environments. L2C provides more than just additional signals – the advanced signal structure provides better strength for more reliable satellite tracking.

Trimble R-Track satellite tracking technology delivers reliable, precise positioning performance. Trimble R-Track with Signal Prediction™ compensates for intermittent or marginal RTK correction signals, enabling extended precision operation after an RTK signal is interrupted.

The CMRx communications protocol provides correction compression for optimized bandwidth and full utilization all of the satellites in view, giving you reliable positioning performance.

Choose the level of GNSS support you require today

Choose the level of GNSS support you require today with the flexible upgrade options available on the Trimble R4. Founded on proven GNSS technology, the Trimble R4 comes standard with GPS L1, L2, L2C and QZSS. Beyond this standard GNSS support, the Trimble R4 offers upgrades to GLONASS, Galileo, and BeiDou (COMPASS)—just choose what you need.

Functions as a vrs rover, RTK rover, or Field base station

Use as a lightweight rover for static surveying or RTK. The Trimble R4 is also completely compatible with Trimble VRS™ solutions, creating a VRS rover for use inside real-time networks. With a built-in 450 MHz receive-only radio or a fully integrated GSM/GPRS radio, this system can be adapted to meet a variety of needs. As a base station, the Trimble R4 with the integrated UHF transmit option is rugged, weather-resistant and compatible with a range of radio solutions.

a dedicated, reliable GNSS Field solution

Pair the Trimble R4 with Trimble Access and the Trimble Slate Controller¹ for a dedicated GNSS solution that is effective for both real time and postprocessed GNSS surveys.

Powerful, connected, and compact, the Trimble Slate Controller combines the convenience and ease-of-use of a smartphone with the durability for which Trimble is known. Its slim, ergonomic design is easy to grasp and its screen provides superior sunlight readability enabling all-day use by hard-working survey professionals.

Trimble Access field software provides specialized and customized workflows to make surveying tasks quicker and easier while enabling teams to communicate vital information between field and office in real-time.

Survey companies can also implement their unique workflows by taking advantage of the customization capabilities available in the Trimble Access Software Development Kit (SDK).

Need to get data back to the office immediately? Benefit from real-time data sharing via Trimble Access Services, now available with any valid Trimble Access maintenance agreement.

Back in the office, users can seamlessly process data with Trimble Business Center office software.

The Trimble R4 GNSS system —ready and reliable for your everyday surveying needs.

¹ The Trimble R4 can be used with a Trimble TSC3, Trimble CU, or Trimble Tablet Rugged PC with the purchase of an advanced data collector option.

Trimble r4 GNSS system

Datasheet

performance specifications

measurements

- Advanced Trimble Maxwell 6 Custom Survey GNSS chip with 220 channels
- Trimble R-Track technology
- High precision multiple correlator for GNSS pseudorange measurements
- Unfiltered, unsmoothed pseudorange measurements data for low noise, low multipath error, low time domain correlation and high dynamic response
- Very low noise GNSS carrier phase measurements with <1 mm precision in a 1 Hz bandwidth
- Signal-to-Noise ratios reported in dB-Hz
- Proven Trimble low elevation tracking technology
- Satellite signals tracked simultaneously:
 - GPS: L1C/A, L1C, L2C, L2E
 - GLONASS¹: L1C/A, L1P, L2C/A, L2P, L3
 - SBAS: L1C/A
 - Galileo¹: E1, E5A, E5B
 - BeiDou¹ (COMPASS): B1, B2
- SBAS: QZSS, WAAS, EGNOS, GAGAN
- Positioning rates: 1 Hz, 2 Hz, 5 Hz, and 10 Hz

positioning performance²

code differential GNSS

positioning

Horizontal	0.25 m + 1 ppm RMS
Vertical	0.50 m + 1 ppm RMS
SBAS differential positioning accuracy ³	typically <5 m 3DRMS

static GNSS

surveying

high-precision static

Horizontal	3 mm + 0.1 ppm RMS
Vertical	3.5 mm + 0.4 ppm RMS

static and Faststatic

Horizontal	3 mm + 0.5 ppm RMS
Vertical	5 mm + 0.5 ppm RMS

postprocessed Kinematic (PPK) GNSS

surveying

Horizontal	8 mm + 1 ppm RMS
Vertical	15 mm + 1 ppm RMS

real time Kinematic surveying⁴

single baseline <30 km

Horizontal	8 mm + 1 ppm RMS
Vertical	15 mm + 1 ppm RMS

network rtk

Horizontal	8 mm + 0.5 ppm RMS
Vertical	15 mm + 0.5 ppm RMS
Initialization time ⁵	typically <8 seconds
Initialization reliability ⁵	typically >99.9%

¹ Optional upgrade.

² Precision and reliability may be subject to anomalies due to multipath, obstructions, satellite geometry, and atmospheric conditions. The specifications stated recommend the use of stable mounts in an open sky view, EMI and multipath clean environment, optimal GNSS constellation configurations, along with the use of survey practices that are generally accepted for performing the highest-order surveys for the applicable application including occupation times appropriate for baseline length. Baselines longer than 30 km require precise ephemeris and occupations up to 24 hours may be required to achieve the high precision static specification.

³ Depends on SBAS system performance.

⁴ Network RTK PPM values are referenced to the closest physical reference station.

⁵ May be affected by atmospheric conditions, signal multipath, obstructions and satellite geometry. Initialization reliability is continuously monitored to ensure highest quality.

⁶ Receiver will operate normally to -40 °C, internal batteries are rated to -20 °C, optional internal GSM modem operates to -30 °C.

⁷ Tracking GPS, GLONASS and SBAS satellites. Optional upgrade required for GLONASS.

⁸ Varies with temperature and wireless data rate. When using a receiver and internal radio in the transmit mode, it is recommended that an external 6 Ah or higher battery is used.

⁹ Varies with terrain and operating conditions.

¹⁰ Bluetooth type approvals are country specific.

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hardware

physical

Dimensions (W×H)	19 cm × 10.2 cm (7.5 in x 4.0 in), including connectors
Weight	1.52 kg (3.35 lb) with internal battery, internal radio with UHF antenna 3.04 kg (6.70 lb) items above plus range pole, controller, and bracket
Temperature ⁶	Operating: -40 °C to +65 °C (-40 °F to +149 °F) Storage: -40 °C to +75 °C (-40 °F to +167 °F)
Humidity	100%, condensing
Water/dustproof	IP67 dustproof, protected from temporary immersion to depth of 1 m (3.28 ft)
Shock and vibration	Tested and meets the following environmental standards: Shock: Non-operating: Designed to survive a 2 m (6.6 ft) pole drop onto concrete. Operating: to 40 G, 10 msec, sawtooth Vibration: MIL-STD-810F, FIG.514.5C-1

electrical

- Power 11 V DC to 28 V DC external power input with over-voltage protection on Port 1 (7-pin Lemo)
- Rechargeable, removable 7.4 V, 2.6 Ah Lithium-Ion battery. Power consumption⁷ is 3.2 W in RTK rover mode with internal radio and Bluetooth in use.
- Operating times on internal battery⁸:
 - 450 MHz receive only option: 5.0 hours
 - 450 MHz receive/transmit option (0.5 W): 2.5 hours
 - Cellular receive option: 4.7 hours

communications and data storage

- Serial: 3-wire serial (7-pin Lemo) on Port 1; full RS-232 serial on Port 2 (Dsub 9 pin)
- Radio modem: fully integrated, fully sealed internal 450 MHz receiver/transmitter option:
 - Transmit power: 0.5 W
 - Range⁹: 3–5 km typical / 10 km optimal
- Cellular: fully integrated, sealed internal GSM/GPRS option
- Bluetooth: fully integrated, sealed 2.4 GHz communications port (Bluetooth[®])¹⁰
- External communication devices for corrections supported on Serial and Bluetooth ports
- Data storage: 11 MB internal memory, 188.6 hours of raw observables (approx. 1.4 MB/day), based on recording every 15 seconds from an average of 14 satellites

data formats

- CMR: CMR+, CMRx input and outputs
- RTCM: RTCM 2.1, RTCM 2.3, RTCM 3.0, RTCM 3.1 input and outputs
- Other outputs: 23 NMEA outputs, GSO, RT17 and RT27 outputs, supports BINEX and smoothed carrier

supported trimble controllers

- Trimble Slate Controller
- Optional¹: Trimble TSC3 controller, Trimble CU controller, Trimble Tablet Rugged PC

certifications

FCC Part 15 (Class B device), 22, 24, 90; CE Mark; C-Tick; 850/1900 MHz; Class 10 GSM/GPRS module; Bluetooth EPL



Specifications subject to change without notice.

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TRIMBLE SLATE CONTROLLER

KEY FEATURES

Familiar, **easy-to-use**, smartphone form factor

All-in-one device that provides both smartphone and data collection capabilities

Durable Gorilla Glass and **4.3 inch capacitive touch display**

Communication technology enables **enhanced connectivity**

Optimized for Trimble Access field software for survey workflow support



A SMART MOBILE SURVEYING SOLUTION

Powerful, connected, and compact, the Trimble® Slate Controller combines the convenience and ease-of-use of a smartphone with the durability for which Trimble is known. Its slim, ergonomic design is easy to grasp and its screen provides superior sunlight readability enabling all-day use by hard-working survey professionals. Optimized for Trimble Access™ field software and the Trimble R4 GNSS receiver, the Trimble Slate Controller fully supports your everyday workflows and unique requirements.

ONE DEVICE FOR BOTH VOICE AND SURVEYING DATA COLLECTION

With the Trimble Slate Controller, you no longer need to juggle a smartphone and a rugged computer to stay connected to the office, your clients, and even your survey equipment. Offering voice, SMS text, and 3.75G cellular data transfer capabilities on GSM cellular networks worldwide, the Trimble Slate Controller is a rugged all-in-one device that enables enhanced communication and survey workflow support in the field.

- Transfer data to and from the cloud using Wi-Fi or WWAN connections
- Connect to a Trimble VRS™ network via high speed connection capabilities
- Connect directly to, and control, the Trimble R4 GNSS receiver using the controller's integrated Bluetooth® capability
- Enhance your job documentation and point attribution by capturing geotagged, high quality, digital photos with the integrated 8 MP camera
- Navigate directly to points using the internal GPS and Compass
- Maintain voice communication with company personnel

DESIGNED TO SUPPORT YOUR DAILY WORKFLOWS

Trimble Access field software, available on the Trimble Slate Controller, offers numerous features and capabilities to streamline the flow of everyday surveying work, such as topographic surveying, stakeout, control, and more. Streamlined workflows guide crews step-by-step through common project types and allow crews to get the job done faster with less distractions, while improving data consistency. Survey companies can also implement their unique workflows by taking advantage of the customization capabilities available in the Trimble Access Software Development Kit (SDK).

The Trimble Access Software Developer Kit provides software developers with the tools to customize and extend Trimble Access.

YOUR MOBILE OFFICE IN THE FIELD

A 1 GHz processor and 512 MB RAM provide powerful computing capabilities that allow you to run software applications quickly and reliably.

The Trimble Slate Controller runs the Windows® Embedded Handheld 6.5 Professional Operating System and Microsoft Office® Mobile® 2010, allowing you to take advantage of mobile office applications such as Word, Excel, PowerPoint, and Outlook, all without a trip to the office.

Once complete, simply transfer the job file back to your office using the Trimble Slate Controller's integrated communications technology. The Trimble Slate Controller is ready for the obstacles that may come your way. Did the client change the deliverables and the crews are already on site? No problem...simply use the communication capabilities to download the new job files without going back to the office.

SMARTPHONE CONVENIENCE. TRIMBLE DURABILITY

Whether on the job site, on the road, or in the office, the Trimble Slate Controller offers the convenient smartphone features you need to stay productive, informed, and in touch while its rugged design is built to withstand the most extreme environments your work requires. At 13.5 oz, its slim, ergonomic design means you can take the Trimble Slate controller anywhere.

Designed to hold up against the toughest of conditions, a 4.3 inch capacitive touch, Gorilla® glass display covers the entire front surface and provides superior sunlight readability without sacrificing durability.

The Trimble Slate Controller operates in extreme temperatures of -30 °C to +60 °C (-22 °F to +140 °F). It can also withstand a pole drop of 1.22 m (4.0 ft) onto a concrete surface.

DEPENDABLE WHEN EVERY POINT COUNTS

The Trimble Slate Controller, partnered with Trimble Access and the Trimble R4 GNSS receiver, provides a dedicated GNSS solution that is effective for both real time and post processed GNSS surveys. Providing everything you need to perform a basic survey campaign, this straightforward solution performs under the most rigorous conditions.

Work smart with the Trimble Slate Controller, an all-in-one device for voice and surveying data collection.

* Trimble Slate Controller is compatible with the Trimble R4 GNSS receiver only.

STANDARD SOFTWARE

Windows Embedded Handheld 6.5 Professional Operating System including:

- Trimble SatViewer (GPS interface application)
- Trimble CellStart (WWAN configuration application)
- Microsoft Office Mobile 2010 (Word Mobile, Excel Mobile, PowerPoint Mobile, Outlook Mobile)
- Internet Explorer Mobile 6
- Microsoft My Phone with SMS Text Messaging
- Camera control application
- Flashlight mode control application
- Calculator
- Calendar
- Microsoft Pictures & Videos
- Windows Media Player
- Windows Live Messenger
- Microsoft Task Manager & Notes
- Adobe Reader LE 2.5

Operating System Language Support: Chinese (Simplified), English, French, German, Italian, Japanese, Korean, Portuguese, Russian or Spanish

STANDARD ACCESSORIES

- International AC charging kit
- USB cable
- Wrist strap
- Capacitive stylus with tether
- Ultra clear screen protectors (qty 2) kit
- Quick Start Guide

OPTIONAL ACCESSORIES

- 9-pin serial adapter
- USB host adapter
- External battery pack
- Port cover
- Ultra clear screen protectors (qty 10) kit
- Anti-reflective screen protectors (qty 2) kit
- Vehicle charging kit
- Capacitive touchscreen gloves
- Trimble headset
- External GPS antenna

All standard accessories are also available to order separately.

PHYSICAL SPECIFICATIONS

Size: 15.5 cm x 8.2 cm x 2.5 cm (6.1 in x 3.2 in x .9 in)
Weight: 0.4 kg (13.5 oz), including battery

CERTIFICATIONS

FCC, CE, R&TTE, IC (Canada), C-tick, GCF compliant, RoHS compliant, Section 508 compliant, PTCRB, SAR, AT&T network compatible, Wi-Fi Alliance certified, CCX, USB 2.0 Full Speed, MIL-STD-810G, IP65/IP68, MIL-STD-461E.

ENVIRONMENTAL SPECIFICATIONS

Temperature:

Operating	−30 °C to 60 °C (−22 °F to 144 °F)
Storage	−40 °C to 70 °C (−40 °F to 158 °F)
Temperature shock	Cycles between −30 °C and 60 °C (−22 °F and 144 °F), MIL-STD-810G, Method 503.5, Procedure I-C
Water	Survives immersion at 1 m (3.3 ft) for two hours, IEC-60529 IPx8
Dust	Protected against dust, IEC-60529 IP6x, dust chamber with under-pressure
Drops	Survives multiple drops of 1.22 m (4 ft), MIL-STD-810G, Method 516.6, Procedure IV, Transit Drop
Humidity	90% relative humidity with temperatures between 30 °C and 60 °C (22 °F and 144 °F), MIL-STD-810G, Method 507.5, Procedure II
Altitude	4,572 m (15,000 ft) at 23 °C (73 °F) to 12,192 m (40,000 ft) at −30 °C (−22 °F), MIL-STD-810G, Method 500.5, Procedure I, II & III
Vibration	General minimum integrity and loose cargo tests, MILSTD-810G, Method 514.6, Procedure I & II, Category 5
Solar Exposure	Survives prolonged UVB exposure, MIL-STD-810G, Method 505.5, Procedure II
Chemical Exposure	Resistant to mild alkaline and acid cleaning solutions, fuel hydrocarbons, alcohols and common vehicle and factory machine lubricants

ELECTRICAL SPECIFICATIONS

- Processor: 1 GHz, Texas Instruments DM3730
- Memory: 512 MB
- Storage: 16 GB SSD
- Expansion: MicroSD memory card slot (supports SDHC up to 32 GB, SIM card slot)
- Display:
 - 10.9 cm (4.3 in), 480 x 800 pixel, WVGA TFT
 - Sunlight-readable Gorilla Glass display
 - Light sensor to auto-adjust display brightness
 - Capacitive multi-touch interface
- Battery: 3.7 V, 3.3 Ah, 12.2 Wh, Lithium-ion polymer
- I/O: Custom Port that supports USB 2.0 Host, USB Client, 9-pin Serial and 5.6 V (5.0 V to 5.9 V) DC input power
- Audio: Integrated speaker and microphone with 3.5mm audio jack
- Wireless:
 - Integrated 3.75G cellular data, text and voice capability
 - Bluetooth 2.1 +EDR;
 - Wi-Fi 802.11 b/g/n
 - WWAN radios: UMTS / HSPA+, GSM / GPRS/ EDGE, UMTS Bands (WCDMA/FDD): 800 AWS, 850 AWS, 1900 AWS and 2100 MHz, GSM Bands: 850 MHz, 900 MHz, 1800 MHz, 1900 MHz
- Camera/GPS/compass/accelerometer:
 - 8 MP camera with geo-tagging and dual LED flash
 - GPS receiver: 2–4 m accuracy with WAAS/SBAS correction; MCX port for optional external antenna
 - Integrated electronic compass and accelerometer

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Agri-Sense International

Appendix 2

Trimble RTX Post Processing Report



Post-Processing Service Based on RTX Technology

TrimbleRTX.com

Contributor: david.gilfillan93@gmail.com
Reference Name: 11270390.T02
Upload Date: 02/09/2018 01:40:21 UTC

Report Time Frame:
Start Time: 02/08/2018 12:11:19 UTC
End Time: 02/09/2018 00:29:01 UTC
Observation File Type(s): T02
Observation File(s): 11270390.T02
Antenna:
Name: TRMR4-3 NONE
Height: 1.770 m
Reference: Bottom of antenna mount
Receiver Name: TRIMBLE R4-3
Coordinate Systems: ITRF2014
Tectonic Plate: North America (Auto-detected)
Tectonic Plate Model: MORVEL56
Processing Interval: 10 s

Statistics

# Total Obs	# Usable Obs	# Used Obs	Percent
44263	4426	4252	96

Used Satellites

# Total Satellites:	45
GPS:	G01 G03 G07 G08 G09 G10 G11 G12 G13 G14 G15 G16 G17 G20 G21 G22 G23 G24 G25 G26 G27 G28 G29 G30 G31 G32
GLONASS:	R01 R02 R03 R04 R05 R06 R07 R08 R10 R11 R13 R15 R16 R19 R20 R21 R22 R23 R24

Processing Results

ITRF2014 at Epoch 2010.0		
Coordinate	Value	σ
X	151771.002 m	0.004 m
Y	-6063955.400 m	0.008 m
Z	1964703.665 m	0.004 m
Latitude	18° 03' 36.12452" N	0.003 m
Longitude	88° 33' 58.60286" W	0.004 m
El. Height	2.610 m	0.009 m

ITRF2014 at Epoch 2018.11		
Coordinate	Value	σ
X	151770.930 m	0.004 m
Y	-6063955.410 m	0.008 m
Z	1964703.640 m	0.004 m
Latitude	18° 03' 36.12368" N	0.003 m
Longitude	88° 33' 58.60533" W	0.004 m
El. Height	2.610 m	0.009 m

Report Information

Trimble RTX Solution ID: 17147326
Solution Type: Static
Software Version: 6.1.4.17185
Creation Date: 02/09/2018 01:44:43 UTC

Disclaimer

Trimble Navigation Limited does not guarantee availability, reliability, and performance of the current RTX Post-Processing service and accepts no legal liability arising from, or connected to, the use of information on this document or use of this service.

Agri-Sense International

Appendix 3

Trimble Baseline Processing

Quality Report

Base Station 1

Project file data		Coordinate System	
Name:	E:\My Documents\2 Agri-Sense\1 Agrisense Jobs\2 Quoted Jobs\Beliez\Drone\GCP Data\Base 1.vce	Name:	World wide/UTM
Size:	2 MB	Datum:	WGS 1984
Modified:	2018/05/11 10:58:52 AM (UTC:2)	Zone:	16 North
Time zone:	South Africa Standard Time	Geoid:	EGM96 (Global)
Reference number:		Vertical datum:	
Description:			
Comment 1:			
Comment 2:			
Comment 3:			

Baseline Processing Report

Observation	From	To	Solution Type	H. Prec. (Meter)	V. Prec. (Meter)	Geodetic Az.	Ellipsoid Dist. (Meter)	Height (Meter)
DG-GCP 1 (B1)	BASE 1 Final	DG-GCP 1	Fixed	0.012	0.020	238°08'24"	6204.872	20.399
DG-GCP 61.2 (B2)	BASE 1 Final	DG-GCP 61.2	Fixed	0.010	0.014	228°16'50"	6146.351	17.481
DG-GCP 64 (B3)	BASE 1 Final	DG-GCP 64	Fixed	0.019	0.018	220°49'50"	5690.317	13.881
DG-GCP 61.1 (B4)	BASE 1 Final	DG-GCP 61.1	Fixed	0.011	0.019	231°12'26"	5741.526	15.647
DG-GCP 62 (B5)	BASE 1 Final	DG-GCP 62	Fixed	0.012	0.030	231°55'57"	6856.374	23.351
DG-GCP 63 (B6)	BASE 1 Final	DG-GCP 63	Fixed	0.011	0.028	221°11'30"	6225.555	13.044
DG-GCP 65 (B7)	BASE 1 Final	DG-GCP 65	Fixed	0.014	0.038	219°14'45"	6622.728	12.843
DG-GCP 65.1 (B8)	BASE 1 Final	DG-GCP 65.1	Fixed	0.009	0.018	222°05'59"	6695.552	14.165
DG-GCP block 1 2 (B9)	BASE 1 Final	DG-GCP block 1 2	Fixed	0.012	0.023	222°23'36"	7843.706	18.173
DG-GCP 67 (B10)	BASE 1 Final	DG-GCP 67	Fixed	0.012	0.021	224°59'53"	7249.841	19.235
DG-GCP 68 (B11)	BASE 1 Final	DG-GCP 68	Fixed	0.012	0.021	231°56'36"	7729.710	38.149
DG-GCP 69 (B12)	BASE 1 Final	DG-GCP 69	Fixed	0.013	0.022	237°36'30"	8415.805	21.169
DG-GCP 70 (B13)	BASE 1 Final	DG-GCP 70	Fixed	0.013	0.024	239°35'19"	8918.581	22.293
DG-GCP 71 (B14)	BASE 1 Final	DG-GCP 71	Fixed	0.015	0.026	243°11'09"	9222.567	20.374
DG-WL (B15)	BASE 1 Final	DG-WL	Fixed	0.018	0.030	246°52'48"	9265.466	23.735
DG-GCP 78 (B16)	BASE 1 Final	DG-GCP 78	Fixed	0.018	0.030	251°21'38"	8460.789	19.859
DG-GCP 79 (B17)	BASE 1 Final	DG-GCP 79	Fixed	0.016	0.024	256°37'09"	7872.954	17.352
DG-GCP 82 (B18)	BASE 1 Final	DG-GCP 82	Fixed	0.020	0.030	265°56'32"	7633.931	15.355
DG-GCP 84 (B19)	BASE 1 Final	DG-GCP 84	Fixed	0.019	0.031	270°01'21"	7455.178	17.507
DG-GCP 83 (B20)	BASE 1 Final	DG-GCP 83	Fixed	0.019	0.032	269°31'56"	8311.119	22.203
DG-GCP 81 (B21)	BASE 1 Final	DG-GCP 81	Fixed	0.022	0.037	265°57'36"	8896.704	21.439
DG-GCP 81.1 (B22)	BASE 1 Final	DG-GCP 81.1	Fixed	0.015	0.027	262°54'14"	8526.551	21.439

nh b6 WL 5 (B807)	BASE 1 Final	nh b6 WL 5	Fixed	0.015	0.033	66°51'42"	13477.118	-3.138
nh b6 GCP 67 (B808)	BASE 1 Final	nh b6 GCP 67	Fixed	0.016	0.032	66°15'47"	13162.957	1.003
nh b6 GCP 68 (B809)	BASE 1 Final	nh b6 GCP 68	Fixed	0.019	0.042	67°21'20"	12591.540	3.774
nh b6 WL 6 (B810)	BASE 1 Final	nh b6 WL 6	Fixed	0.021	0.037	67°52'14"	12785.544	-1.511
nh b8 GCP 15.1 (B811)	BASE 1 Final	nh b8 GCP 15.1	Fixed	0.021	0.041	59°19'46"	13592.232	4.505
nh b8 GCP 15.2 (B812)	BASE 1 Final	nh b8 GCP 15.2	Fixed	0.016	0.027	61°43'03"	13973.850	-1.260
nh b8 GCP 17 (B813)	BASE 1 Final	nh b8 GCP 17	Fixed	0.022	0.041	57°43'42"	14839.264	-5.659
nh b8 GCP 18 (B814)	BASE 1 Final	nh b8 GCP 18	Fixed	0.014	0.024	54°44'41"	14752.559	1.206
nh b8 WL 1 (B815)	BASE 1 Final	nh b8 WL 1	Fixed	0.017	0.034	55°19'24"	14748.738	0.968
nh b8 WL 2 (B816)	BASE 1 Final	nh b8 WL 2	Fixed	0.027	0.049	52°44'04"	15427.897	-3.367
nh b8 GCP 19 (B817)	BASE 1 Final	nh b8 GCP 19	Fixed	0.021	0.038	52°44'11"	15413.793	-2.513
nh b8 GCP 20 (B818)	BASE 1 Final	nh b8 GCP 20	Fixed	0.053	0.049	54°29'05"	16167.707	-7.708
nh b8 GCP 16 (B819)	BASE 1 Final	nh b8 GCP 16	Fixed	0.017	0.037	56°41'06"	14258.070	5.167
nh b8 GCP 10 (B820)	BASE 1 Final	nh b8 GCP 10	Fixed	0.012	0.024	56°23'26"	13287.510	6.243
nh b7 GCP 43.2 (B821)	BASE 1 Final	nh b7 GCP 43.2	Fixed	0.008	0.014	130°30'47"	4573.538	-1.890
dg dos level str (B822)	BASE 1 Final	dg dos level str	Fixed	0.007	0.012	305°25'10"	745.675	2.389
dg dos 1 (B823)	BASE 1 Final	dg dos 1	Fixed	0.014	0.024	305°13'34"	761.417	2.685
dg str level (B824)	BASE 1 Final	dg str level	Fixed	0.009	0.016	159°05'37"	935.496	2.738
dg dos 2 (B825)	BASE 1 Final	dg dos 2	Fixed	0.009	0.016	58°58'09"	755.015	6.149
dg-GCP-b7-6 (B776)	BASE 1 Final	dg-GCP-b7-6	Fixed	0.015	0.029	34°58'46"	13673.634	-6.296
dg-GCP-b7-7 (B777)	BASE 1 Final	dg-GCP-b7-7	Fixed	0.017	0.032	39°38'55"	12129.767	-8.408
dg-GCP-b7-8 (B778)	BASE 1 Final	dg-GCP-b7-8	Fixed	0.015	0.030	42°24'17"	12453.689	-6.587
dg-GCP-b7-8.1 (B780)	BASE 1 Final	dg-GCP-b7-8.1	Fixed	0.013	0.025	40°11'18"	13104.249	-0.621
dg-GCP-b7-wl8 (B781)	BASE 1 Final	dg-GCP-b7-wl8	Fixed	0.016	0.033	37°58'11"	13282.592	-1.717
dg-GCP-b7-78 (B782)	BASE 1 Final	dg-GCP-b7-78	Fixed	0.017	0.032	37°58'17"	13295.103	-1.094
dg-GCP-b7-79 (B783)	BASE 1 Final	dg-GCP-b7-79	Fixed	0.023	0.042	42°54'13"	13514.314	1.487
dg-GCP-b7-80 (B784)	BASE 1 Final	dg-GCP-b7-80	Fixed	0.018	0.030	38°43'33"	13927.981	-0.942
dg-GCP-b7-81 (B785)	BASE 1 Final	dg-GCP-b7-81	Fixed	0.016	0.026	42°04'08"	14415.733	4.826
dg-GCP-b7-82 (B786)	BASE 1 Final	dg-GCP-b7-82	Fixed	0.018	0.029	44°43'42"	14796.243	4.037
dg-GCP-b7-wl99 (B787)	BASE 1 Final	dg-GCP-b7-wl99	Fixed	0.018	0.036	35°55'47"	16306.614	-1.717
dg-GCP-b7-13 (B788)	BASE 1 Final	dg-GCP-b7-13	Fixed	0.014	0.026	34°04'51"	17200.592	-8.320

dg-GCP-b7-14 (B789)	BASE 1 Final	dg-GCP-b7-14	Fixed	0.038	0.056	35°14'58"	16828.091	-1.405
dg-GCP-b7-15 (B790)	BASE 1 Final	dg-GCP-b7-15	Fixed	0.057	0.061	35°22'52"	15994.935	-6.654
nh b5 WL 1 (B791)	BASE 1 Final	nh b5 WL 1	Fixed	0.012	0.022	1°14'41"	16042.564	-8.253
nh b5 GCP 87 (B792)	BASE 1 Final	nh b5 GCP 87	Fixed	0.012	0.028	11°23'10"	12994.631	-8.199
nh b5 GCP 88 (B793)	BASE 1 Final	nh b5 GCP 88	Fixed	0.012	0.022	11°33'58"	12534.565	-7.752
nh b5 GCP 89 (B794)	BASE 1 Final	nh b5 GCP 89	Fixed	0.013	0.021	14°23'52"	12542.958	-5.624
nh b5 GCP 83.2 (B795)	BASE 1 Final	nh b5 GCP 83.2	Fixed	0.017	0.029	11°25'19"	13848.612	-7.711
nh b5 GCP 23.2 (B796)	BASE 1 Final	nh b5 GCP 23.2	Fixed	0.014	0.029	22°20'11"	12874.327	-8.097
nh b5 GCP 21 (B797)	BASE 1 Final	nh b5 GCP 21	Fixed	0.015	0.026	29°39'35"	11226.086	-4.731
nh b6 GCP 60 (B798)	BASE 1 Final	nh b6 GCP 60	Fixed	0.013	0.024	58°16'23"	12495.003	2.769
nh b6 GCP 62 (B799)	BASE 1 Final	nh b6 GCP 62	Fixed	0.013	0.028	61°13'49"	11883.857	5.054
nh b6 GCP 63 (B800)	BASE 1 Final	nh b6 GCP 63	Fixed	0.013	0.029	64°44'40"	11359.114	6.809
nh b6 GCP 54 (B801)	BASE 1 Final	nh b6 GCP 54	Fixed	0.014	0.029	61°30'56"	10981.553	5.980
nh b6 WL 4 (B802)	BASE 1 Final	nh b6 WL 4	Fixed	0.014	0.029	61°09'07"	11567.528	2.733
nh b6 GCP 64 (B803)	BASE 1 Final	nh b6 GCP 64	Fixed	0.014	0.030	63°01'19"	12574.526	3.607
nh b8 GCP 21 (B804)	BASE 1 Final	nh b8 GCP 21	Fixed	0.014	0.026	62°17'05"	13487.368	2.557
nh b6 GCP 65 (B805)	BASE 1 Final	nh b6 GCP 65	Fixed	0.015	0.028	63°37'44"	13452.206	0.871
nh b6 GCP 66 (B806)	BASE 1 Final	nh b6 GCP 66	Fixed	0.015	0.028	65°54'54"	13719.093	-3.229
nh b6 GCP 51 (B664)	BASE 1 Final	nh b6 GCP 51	Fixed	0.013	0.030	49°46'56"	10531.088	-0.415
nh b6 GCP 45 (B665)	BASE 1 Final	nh b6 GCP 45	Fixed	0.013	0.028	52°51'55"	9997.988	2.337
nh b6 GCP 52 (B666)	BASE 1 Final	nh b6 GCP 52	Fixed	0.016	0.029	54°46'09"	10780.366	2.279
nh b6 GCP 55 (B667)	BASE 1 Final	nh b6 GCP 55	Fixed	0.015	0.025	46°49'49"	11132.481	-4.848
nh b6 GCP 59 (B668)	BASE 1 Final	nh b6 GCP 59	Fixed	0.013	0.020	52°35'17"	11250.679	0.403
nh b6 WL 13 (B669)	BASE 1 Final	nh b6 WL 13	Fixed	0.021	0.039	51°42'49"	12011.336	-1.578
nh b6 GCP 57 (B670)	BASE 1 Final	nh b6 GCP 57	Fixed	0.014	0.022	53°08'43"	12154.012	3.148
nh b6 GCP 53 (B672)	BASE 1 Final	nh b6 GCP 53	Fixed	0.012	0.024	57°40'26"	11403.212	5.293
nh b6 GCP 54 (B673)	BASE 1 Final	nh b6 GCP 54	Fixed	0.014	0.026	55°38'49"	11793.320	3.318
nh b8 GCP 9 (B675)	BASE 1 Final	nh b8 GCP 9	Fixed	0.014	0.026	55°45'32"	12655.953	2.787
nh b6 GCP 60 (B676)	BASE 1 Final	nh b6 GCP 60	Fixed	0.015	0.027	60°27'11"	13254.560	5.742
nh b6 WL 15 (B677)	BASE 1 Final	nh b6 WL 15	Fixed	0.015	0.028	38°34'58"	10184.154	-8.641

nh b8 GCP 1 (B678)	BASE 1 Final	nh b8 GCP 1	Fixed	0.014	0.026	38°33'30"	10184.076	-7.684
nh b6 GCP 71.1 (B679)	BASE 1 Final	nh b6 GCP 71.1	Fixed	0.014	0.026	36°31'54"	10284.261	-6.428
dg-GCP-b5-16 (B680)	BASE 1 Final	dg-GCP-b5-16	Fixed	0.008	0.022	84°03'35"	6183.177	-0.591
dg-GCP-b5-26 (B681)	BASE 1 Final	dg-GCP-b5-26	Fixed	0.012	0.027	99°42'44"	7405.355	3.529
dg-GCP-b5-26.1 (B682)	BASE 1 Final	dg-GCP-b5-26.1	Fixed	0.011	0.023	99°42'43"	7405.373	3.533
dg-GCP-b5-wl (B683)	BASE 1 Final	dg-GCP-b5-wl	Fixed	0.013	0.026	99°59'35"	7532.218	2.245
dg-GCP-b5-27.1 (B684)	BASE 1 Final	dg-GCP-b5-27.1	Fixed	0.014	0.027	101°29'32"	8094.067	7.125
dg-GCP-b5-27.2 (B685)	BASE 1 Final	dg-GCP-b5-27.2	Fixed	0.016	0.029	106°06'38"	8650.823	9.389
dg-GCP-b5-29 (B686)	BASE 1 Final	dg-GCP-b5-29	Fixed	0.017	0.028	107°19'42"	8222.210	4.822
dg-GCP-b5-29.1 (B687)	BASE 1 Final	dg-GCP-b5-29.1	Fixed	0.016	0.026	108°28'23"	7483.935	2.967
dg-GCP-b5-29.2 (B688)	BASE 1 Final	dg-GCP-b5-29.2	Fixed	0.017	0.031	113°41'29"	6844.407	1.462
dg-GCP-b5-29.3 (B689)	BASE 1 Final	dg-GCP-b5-29.3	Fixed	0.019	0.034	106°52'43"	6664.853	2.974
dg-GCP-b5-51 (B690)	BASE 1 Final	dg-GCP-b5-51	Fixed	0.021	0.037	106°49'16"	6841.623	3.036
dg-GCP-b5-27.111 (B691)	BASE 1 Final	dg-GCP-b5-27.111	Fixed	0.018	0.027	102°21'35"	9157.804	-1.555
dg-GCP-b5-27.112 (B692)	BASE 1 Final	dg-GCP-b5-27.112	Fixed	0.018	0.028	102°39'26"	9395.008	-4.123
dg-GCP-b5-np56 (B693)	BASE 1 Final	dg-GCP-b5-np56	Fixed	0.018	0.030	102°18'54"	8806.010	5.343
dg-GCP-b5-32 (B694)	BASE 1 Final	dg-GCP-b5-32	Fixed	0.014	0.026	106°34'12"	9442.108	-1.699
dg-GCP-b5-32.1 (B695)	BASE 1 Final	dg-GCP-b5-32.1	Fixed	0.016	0.032	109°25'57"	8963.835	4.027
dg-GCP-b5-32.2 (B696)	BASE 1 Final	dg-GCP-b5-32.2	Fixed	0.015	0.031	110°54'20"	7906.319	0.412
dg-GCP-b5-32.3 (B697)	BASE 1 Final	dg-GCP-b5-32.3	Fixed	0.016	0.036	110°33'21"	9493.368	-3.261
dg-GCP-b5-32.4 (B698)	BASE 1 Final	dg-GCP-b5-32.4	Fixed	0.016	0.033	114°17'36"	8969.258	1.024
dg-GCP-b5-33 (B699)	BASE 1 Final	dg-GCP-b5-33	Fixed	0.016	0.028	113°50'39"	8514.812	4.839
dg-GCP-b5-34 (B700)	BASE 1 Final	dg-GCP-b5-34	Fixed	0.017	0.030	117°44'18"	9092.668	-1.440
dg-GCP-b5-wl1 (B701)	BASE 1 Final	dg-GCP-b5-wl1	Fixed	0.019	0.033	117°39'15"	9207.374	-5.102
dg-GCP-b5-35 (B702)	BASE 1 Final	dg-GCP-b5-35	Fixed	0.018	0.028	119°04'24"	9877.615	5.665
dg-GCP-b5-36 (B703)	BASE 1 Final	dg-GCP-b5-36	Fixed	0.017	0.024	116°16'25"	10157.366	-4.534
dg-GCP-b5-36.1 (B704)	BASE 1 Final	dg-GCP-b5-36.1	Fixed	0.015	0.026	120°13'36"	8856.257	6.857
dg-GCP-b5-36.2 (B705)	BASE 1 Final	dg-GCP-b5-36.2	Fixed	0.013	0.025	119°53'34"	8197.421	1.070

dg-GCP-b5-38 (B706)	BASE 1 Final	dg-GCP-b5-38	Fixed	0.014	0.033	124°34'03"	8425.696	10.415
dg-GCP-b5-39 (B707)	BASE 1 Final	dg-GCP-b5-39	Fixed	0.014	0.033	126°25'17"	7457.485	3.368
dg-GCP-b5-40 (B708)	BASE 1 Final	dg-GCP-b5-40	Fixed	0.022	0.044	125°53'15"	7085.452	0.272
dg-GCP-b5-41 (B709)	BASE 1 Final	dg-GCP-b5-41	Fixed	0.011	0.020	121°57'47"	7276.276	2.902
dg-GCP-b5-39.2 (B710)	BASE 1 Final	dg-GCP-b5-39.2	Fixed	0.013	0.021	126°28'49"	6910.222	-2.011
dg-GCP-b5-39.3 (B711)	BASE 1 Final	dg-GCP-b5-39.3	Fixed	0.016	0.027	29°16'24"	11184.892	-5.037
dg-GCP-b5-39.4 (B712)	BASE 1 Final	dg-GCP-b5-39.4	Fixed	0.015	0.025	28°53'50"	11674.721	-6.825
dg-GCP-b5-wl3 (B713)	BASE 1 Final	dg-GCP-b5-wl3	Fixed	0.015	0.026	28°54'46"	11665.009	-8.168
dg-GCP-b5-71.1 (B714)	BASE 1 Final	dg-GCP-b5-71.1	Fixed	0.014	0.025	34°10'52"	9990.755	-0.411
dg-GCP-b5-17 (B715)	BASE 1 Final	dg-GCP-b5-17	Fixed	0.015	0.029	21°29'40"	9647.609	-8.151
dg-GCP-b5-76 (B716)	BASE 1 Final	dg-GCP-b5-76	Fixed	0.020	0.040	38°57'52"	9489.395	-6.792
dg-GCP-b5-77 (B717)	BASE 1 Final	dg-GCP-b5-77	Fixed	0.020	0.039	35°21'21"	9052.869	-2.104
dg-GCP-b5-78 (B718)	BASE 1 Final	dg-GCP-b5-78	Fixed	0.020	0.038	37°50'28"	8512.499	-6.204
dg-GCP-b5-79 (B719)	BASE 1 Final	dg-GCP-b5-79	Fixed	0.021	0.038	42°48'53"	8912.200	-7.551
nh b7 GCP 3 (B720)	BASE 1 Final	nh b7 GCP 3	Fixed	0.009	0.020	34°17'27"	3202.191	-5.081
nh b7 GCP 57 (B721)	BASE 1 Final	nh b7 GCP 57	Fixed	0.010	0.024	76°54'37"	3312.623	1.815
nh b7 GCP 59 (B722)	BASE 1 Final	nh b7 GCP 59	Fixed	0.011	0.026	76°49'19"	2609.312	-4.597
nh b7 WL 1 (B723)	BASE 1 Final	nh b7 WL 1	Fixed	0.008	0.023	81°56'09"	4144.176	1.279
nh b7 GCP 58 (B724)	BASE 1 Final	nh b7 GCP 58	Fixed	0.011	0.034	85°01'38"	4123.100	1.532
nh b7 GCP 56 (B725)	BASE 1 Final	nh b7 GCP 56	Fixed	0.010	0.022	87°11'50"	3241.196	-1.187
nh b7 GCP 47.1 (B726)	BASE 1 Final	nh b7 GCP 47.1	Fixed	0.009	0.017	96°51'05"	3373.804	-0.783
nh b7 GCP 47.2 (B727)	BASE 1 Final	nh b7 GCP 47.2	Fixed	0.012	0.020	97°09'07"	3947.254	0.867
nh b7 GCP 48 (B728)	BASE 1 Final	nh b7 GCP 48	Fixed	0.013	0.020	99°39'30"	4395.927	-0.040
nh b7 GCP 48.2 (B729)	BASE 1 Final	nh b7 GCP 48.2	Fixed	0.016	0.024	99°39'30"	4395.926	-0.053
nh b7 GCP 53.4 (B730)	BASE 1 Final	nh b7 GCP 53.4	Fixed	0.014	0.022	101°08'45"	5133.387	-2.505
nh b7 GCP 49 (B731)	BASE 1 Final	nh b7 GCP 49	Fixed	0.018	0.029	98°32'10"	5695.741	-3.766
nh b7 GCP 50 (B732)	BASE 1 Final	nh b7 GCP 50	Fixed	0.014	0.021	99°58'02"	6436.957	0.572
nh b7 GCP 54 (B733)	BASE 1 Final	nh b7 GCP 54	Fixed	0.013	0.020	99°44'43"	3158.719	-3.588
nh b7 GCP 46.1	BASE 1 Final	nh b7 GCP	Fixed	0.013	0.022	106°37'40"	3674.962	-1.444

(B734)		46.1						
nh b7 GCP 46.2 (B735)	BASE 1 Final	nh b7 GCP 46.2	Fixed	0.016	0.029	112°14'19"	3190.067	-5.169
nh b7 WL 2 (B736)	BASE 1 Final	nh b7 WL 2	Fixed	0.021	0.043	112°37'47"	3935.258	-5.961
nh b7 GCP 45 (B737)	BASE 1 Final	nh b7 GCP 45	Fixed	0.011	0.023	114°42'40"	4060.858	-4.895
nh b7 GCP 53.1 (B738)	BASE 1 Final	nh b7 GCP 53.1	Fixed	0.021	0.051	110°30'16"	5309.615	-3.363
nh b7 GCP 53.2 (B739)	BASE 1 Final	nh b7 GCP 53.2	Fixed	0.021	0.042	114°33'01"	4816.430	-5.368
nh b7 GCP 44 (B740)	BASE 1 Final	nh b7 GCP 44	Fixed	0.013	0.021	129°19'24"	4029.697	-5.762
nh b7 GCP 43 (B741)	BASE 1 Final	nh b7 GCP 43	Fixed	0.015	0.021	121°42'17"	4533.856	-1.730
nh b7 WL 3 (B742)	BASE 1 Final	nh b7 WL 3	Fixed	0.024	0.040	126°26'22"	4999.560	-1.068
nh b7 GCP 40 (B743)	BASE 1 Final	nh b7 GCP 40	Fixed	0.015	0.022	128°46'36"	5255.207	-0.393
nh b7 GCP 41 (B744)	BASE 1 Final	nh b7 GCP 41	Fixed	0.011	0.018	119°48'55"	5556.256	1.378
nh b7 GCP 40.1 (B745)	BASE 1 Final	nh b7 GCP 40.1	Fixed	0.012	0.025	125°22'07"	6227.370	-2.007
nh b7 GCP 40.2 (B746)	BASE 1 Final	nh b7 GCP 40.2	Fixed	0.012	0.024	125°22'07"	6227.372	-2.005
nh b7 GCP 39.3 (B747)	BASE 1 Final	nh b7 GCP 39.3	Fixed	0.012	0.025	131°29'58"	5730.237	2.842
nh b7 WL 4 (B748)	BASE 1 Final	nh b7 WL 4	Fixed	0.011	0.026	133°00'16"	5463.104	0.212
nh b7 GCP 8 (B749)	BASE 1 Final	nh b7 GCP 8	Fixed	0.011	0.023	74°44'20"	4250.026	1.087
nh b6 GCP 56 (B750)	BASE 1 Final	nh b6 GCP 56	Fixed	0.011	0.019	49°14'12"	11917.526	-3.784
nh b8 GCP 23 (B751)	BASE 1 Final	nh b8 GCP 23	Fixed	0.012	0.020	66°56'57"	14318.121	3.783
nh b8 GCP 24 (B752)	BASE 1 Final	nh b8 GCP 24	Fixed	0.015	0.029	68°00'40"	14763.139	2.615
nh b8 WL 5 (B753)	BASE 1 Final	nh b8 WL 5	Fixed	0.017	0.033	68°32'05"	14932.246	3.296
nh b6 GCP 69 (B754)	BASE 1 Final	nh b6 GCP 69	Fixed	0.017	0.032	69°29'09"	13558.296	-5.347
nh b8 GCP 22 (B755)	BASE 1 Final	nh b8 GCP 22	Fixed	0.017	0.031	70°41'10"	14003.364	4.078
nh b6 GCP 70 (B756)	BASE 1 Final	nh b6 GCP 70	Fixed	0.014	0.024	72°02'52"	14068.761	6.294
dg-GCP-b5-30.2 (B758)	BASE 1 Final	dg-GCP-b5- 30.2	Fixed	0.016	0.038	119°46'15"	6285.962	-3.781
dg-GCP-b5-40-30c (B759)	BASE 1 Final	dg-GCP-b5- 40-30c	Fixed	0.012	0.034	113°36'28"	5984.775	-4.117
dg-GCP-b5-52 (B760)	BASE 1 Final	dg-GCP-b5- 52	Fixed	0.017	0.036	108°34'07"	5818.605	-4.758
dg-GCP-b5-43 (B762)	BASE 1 Final	dg-GCP-b5- 43	Fixed	0.015	0.023	116°06'21"	9607.055	-3.908
dg-GCP-b5-44 (B763)	BASE 1 Final	dg-GCP-b5- 44	Fixed	0.016	0.026	119°41'32"	9423.252	-3.218
dg-GCP-b5-30.21 (B764)	BASE 1 Final	dg-GCP-b5- 30.21	Fixed	0.011	0.024	114°21'42"	7431.838	1.478
dg-GCP-b5-30.22	BASE 1 Final	dg-GCP-b5-	Fixed	0.012	0.026	117°09'51"	7509.927	2.605

(B765)		30.22						
dg-GCP-b7-1 (B766)	BASE 1 Final	dg-GCP-b7-1	Fixed	0.015	0.025	28°28'47"	12358.055	-8.687
dg-GCP-b7-2 (B767)	BASE 1 Final	dg-GCP-b7-2	Fixed	0.014	0.026	30°31'25"	11959.764	-7.584
dg-GCP-b6-85 (B768)	BASE 1 Final	dg-GCP-b6-85	Fixed	0.013	0.026	34°54'25"	11958.119	-7.590
dg-GCP-b6-wl (B769)	BASE 1 Final	dg-GCP-b6-wl	Fixed	0.014	0.027	34°56'30"	11959.900	-8.636
dg-GCP-b6-wm (B770)	BASE 1 Final	dg-GCP-b6-wm	Fixed	0.014	0.029	36°21'19"	12423.963	-8.398
dg-GCP-b6-84 (B771)	BASE 1 Final	dg-GCP-b6-84	Fixed	0.014	0.028	36°21'29"	12433.245	-7.879
dg-GCP-b6-86 (B772)	BASE 1 Final	dg-GCP-b6-86	Fixed	0.015	0.030	37°13'21"	12798.701	-4.034
dg-GCP-b7-3 (B773)	BASE 1 Final	dg-GCP-b7-3	Fixed	0.015	0.034	34°35'18"	13151.652	-8.407
dg-GCP-b7-4 (B774)	BASE 1 Final	dg-GCP-b7-4	Fixed	0.015	0.031	32°52'23"	13686.971	-8.079
dg-GCP-b7-5 (B775)	BASE 1 Final	dg-GCP-b7-5	Fixed	0.016	0.032	33°13'23"	14199.081	-7.781
dg-GCP-b7-6 (B776)	BASE 1 Final	dg-GCP-b7-6	Fixed	0.015	0.029	34°58'46"	13673.634	-6.296
dg-GCP-b7-7 (B777)	BASE 1 Final	dg-GCP-b7-7	Fixed	0.017	0.032	39°38'55"	12129.767	-8.408
dg-GCP-b7-8 (B778)	BASE 1 Final	dg-GCP-b7-8	Fixed	0.015	0.030	42°24'17"	12453.689	-6.587
dg-GCP-b7-8.1 (B780)	BASE 1 Final	dg-GCP-b7-8.1	Fixed	0.013	0.025	40°11'18"	13104.249	-0.621
dg-GCP-b7-wl8 (B781)	BASE 1 Final	dg-GCP-b7-wl8	Fixed	0.016	0.033	37°58'11"	13282.592	-1.717
dg-GCP-b7-78 (B782)	BASE 1 Final	dg-GCP-b7-78	Fixed	0.017	0.032	37°58'17"	13295.103	-1.094
dg-GCP-b7-79 (B783)	BASE 1 Final	dg-GCP-b7-79	Fixed	0.023	0.042	42°54'13"	13514.314	1.487
dg-GCP-b7-80 (B784)	BASE 1 Final	dg-GCP-b7-80	Fixed	0.018	0.030	38°43'33"	13927.981	-0.942
dg-GCP-b7-81 (B785)	BASE 1 Final	dg-GCP-b7-81	Fixed	0.016	0.026	42°04'08"	14415.733	4.826
dg-GCP-b7-82 (B786)	BASE 1 Final	dg-GCP-b7-82	Fixed	0.018	0.029	44°43'42"	14796.243	4.037
dg-GCP-b7-wl99 (B787)	BASE 1 Final	dg-GCP-b7-wl99	Fixed	0.018	0.036	35°55'47"	16306.614	-1.717
dg-GCP-b7-13 (B788)	BASE 1 Final	dg-GCP-b7-13	Fixed	0.014	0.026	34°04'51"	17200.592	-8.320
dg-GCP-b7-14 (B789)	BASE 1 Final	dg-GCP-b7-14	Fixed	0.038	0.056	35°14'58"	16828.091	-1.405
dg-GCP-b7-15 (B790)	BASE 1 Final	dg-GCP-b7-15	Fixed	0.057	0.061	35°22'52"	15994.935	-6.654
nh b5 WL 1 (B791)	BASE 1 Final	nh b5 WL 1	Fixed	0.012	0.022	1°14'41"	16042.564	-8.253
nh b5 GCP 87 (B792)	BASE 1 Final	nh b5 GCP 87	Fixed	0.012	0.028	11°23'10"	12994.631	-8.199
nh b5 GCP 88 (B793)	BASE 1 Final	nh b5 GCP 88	Fixed	0.012	0.022	11°33'58"	12534.565	-7.752
nh b5 GCP 89 (B794)	BASE 1 Final	nh b5 GCP 89	Fixed	0.013	0.021	14°23'52"	12542.958	-5.624
nh b5 GCP 83.2 (B795)	BASE 1 Final	nh b5 GCP 83.2	Fixed	0.017	0.029	11°25'19"	13848.612	-7.711
nh b5 GCP 23.2	BASE 1 Final	nh b5 GCP	Fixed	0.014	0.029	22°20'11"	12874.327	-8.097

(B796)		23.2						
nh b5 GCP 21 (B797)	BASE 1 Final	nh b5 GCP 21	Fixed	0.015	0.026	29°39'35"	11226.086	-4.731
nh b6 GCP 60 (B798)	BASE 1 Final	nh b6 GCP 60	Fixed	0.013	0.024	58°16'23"	12495.003	2.769
nh b6 GCP 62 (B799)	BASE 1 Final	nh b6 GCP 62	Fixed	0.013	0.028	61°13'49"	11883.857	5.054
nh b6 GCP 63 (B800)	BASE 1 Final	nh b6 GCP 63	Fixed	0.013	0.029	64°44'40"	11359.114	6.809
nh b6 GCP 54 (B801)	BASE 1 Final	nh b6 GCP 54	Fixed	0.014	0.029	61°30'56"	10981.553	5.980
nh b6 WL 4 (B802)	BASE 1 Final	nh b6 WL 4	Fixed	0.014	0.029	61°09'07"	11567.528	2.733
nh b6 GCP 64 (B803)	BASE 1 Final	nh b6 GCP 64	Fixed	0.014	0.030	63°01'19"	12574.526	3.607
nh b8 GCP 21 (B804)	BASE 1 Final	nh b8 GCP 21	Fixed	0.014	0.026	62°17'05"	13487.368	2.557
nh b6 GCP 65 (B805)	BASE 1 Final	nh b6 GCP 65	Fixed	0.015	0.028	63°37'44"	13452.206	0.871
DG-104.2 (B247)	BASE 1 Final	DG-104.2	Fixed	0.010	0.019	279°52'10"	8123.068	16.433
DG-106 (B248)	BASE 1 Final	DG-106	Fixed	0.015	0.024	284°26'10"	8642.113	18.720
DG-119.2 (B249)	BASE 1 Final	DG-119.2	Fixed	0.017	0.024	284°15'14"	7959.186	6.534
DG-112 (B250)	BASE 1 Final	DG-112	Fixed	0.018	0.024	288°22'27"	9831.146	9.019
DG-56 (B251)	BASE 1 Final	DG-56	Fixed	0.013	0.023	315°41'03"	13103.232	-6.797
DG-59 (B252)	BASE 1 Final	DG-59	Fixed	0.016	0.029	317°08'44"	12484.660	-3.110
DG-60 (B253)	BASE 1 Final	DG-60	Fixed	0.022	0.050	321°10'57"	12666.240	-4.881
DG-76 (B254)	BASE 1 Final	DG-76	Fixed	0.011	0.027	335°06'54"	10900.475	7.980
nh b1 WL 25 (B255)	BASE 1 Final	nh b1 WL 25	Fixed	0.013	0.026	214°20'57"	9698.927	9.296
nh b1 WL 26 (B256)	BASE 1 Final	nh b1 WL 26	Fixed	0.014	0.025	211°00'28"	10136.764	0.217
nh b1 WL 27 (B257)	BASE 1 Final	nh b1 WL 27	Fixed	0.014	0.024	210°39'23"	10307.271	-0.729
nh b1 WL 28 (B258)	BASE 1 Final	nh b1 WL 28	Fixed	0.015	0.023	210°27'22"	10447.832	-0.197
nh b1 WL 29 (B259)	BASE 1 Final	nh b1 WL 29	Fixed	0.015	0.023	211°08'21"	10723.981	3.391
nh b1 GCP 18 (B260)	BASE 1 Final	nh b1 GCP 18	Fixed	0.017	0.023	218°37'03"	12283.349	20.964
nh b1 GCP 19 (B261)	BASE 1 Final	nh b1 GCP 19	Fixed	0.016	0.021	214°41'33"	12595.180	11.702
nh b1 GCP 19.2 (B262)	BASE 1 Final	nh b1 GCP 19.2	Fixed	0.020	0.028	219°07'22"	13016.720	32.546
nh b1 GCP 20 (B263)	BASE 1 Final	nh b1 GCP 20	Fixed	0.015	0.024	215°50'34"	13427.020	22.731
nh b1 GCP 22 (B264)	BASE 1 Final	nh b1 GCP 22	Fixed	0.012	0.023	214°16'00"	14397.962	35.610
nh b1 GCP 24 (B265)	BASE 1 Final	nh b1 GCP 24	Fixed	0.016	0.038	213°06'54"	15208.379	20.207
nh b1 GCP 25 (B266)	BASE 1 Final	nh b1 GCP 25	Fixed	0.014	0.035	209°10'12"	14981.489	10.936
DG-88 (B267)	BASE 1 Final	DG-88	Fixed	0.023	0.022	259°38'40"	10521.089	16.375
DG-89 (B268)	BASE 1 Final	DG-89	Fixed	0.023	0.023	259°45'45"	10511.210	17.371
DG-wl (B269)	BASE 1 Final	DG-wl	Fixed	0.035	0.028	258°49'56"	10552.952	9.785

DG-87 (B270)	BASE 1 Final	DG-87	Fixed	0.025	0.029	262°43'37"	9498.754	24.279
DG-85 (B271)	BASE 1 Final	DG-85	Fixed	0.020	0.027	273°10'38"	8952.795	22.417
DG-w1 (B272)	BASE 1 Final	DG-w1	Fixed	0.020	0.029	292°25'34"	8709.848	2.625
DG-w2 (B273)	BASE 1 Final	DG-w2	Fixed	0.013	0.023	292°20'05"	8413.070	5.854
DG-118 (B274)	BASE 1 Final	DG-118	Fixed	0.013	0.029	284°25'05"	6909.566	16.909
DG-np (B275)	BASE 1 Final	DG-np	Fixed	0.013	0.030	292°05'22"	6815.299	19.209
DG-48 (B276)	BASE 1 Final	DG-48	Fixed	0.014	0.034	291°11'39"	7621.339	21.386
DG-49 (B277)	BASE 1 Final	DG-49	Fixed	0.015	0.037	297°42'19"	7703.364	20.171
DG-23 (B278)	BASE 1 Final	DG-23	Fixed	0.014	0.034	304°23'00"	7897.957	17.697
DG-24 (B279)	BASE 1 Final	DG-24	Fixed	0.015	0.035	309°55'21"	8157.828	14.051
DG-25 (B280)	BASE 1 Final	DG-25	Fixed	0.020	0.051	321°34'27"	8321.174	6.565
DG-31 (B281)	BASE 1 Final	DG-31	Fixed	0.018	0.043	322°37'55"	9157.578	9.414
DG-99 (B282)	BASE 1 Final	DG-99	Fixed	0.012	0.023	340°37'30"	11133.674	1.981
DG-75 (B283)	BASE 1 Final	DG-75	Fixed	0.016	0.029	334°15'48"	11688.623	2.587
DG-71 (B284)	BASE 1 Final	DG-71	Fixed	0.016	0.028	331°45'00"	11929.251	-4.867
DG-74 (B285)	BASE 1 Final	DG-74	Fixed	0.016	0.027	329°48'27"	12162.022	-6.431
DG-w1 3 (B286)	BASE 1 Final	DG-w1 3	Fixed	0.020	0.035	327°02'55"	12540.186	-7.869
DG-77 (B287)	BASE 1 Final	DG-77	Fixed	0.016	0.028	326°20'30"	12719.761	-6.796
DG-67 (B288)	BASE 1 Final	DG-67	Fixed	0.017	0.027	326°20'42"	13511.979	-5.913
DG-68 (B289)	BASE 1 Final	DG-68	Fixed	0.020	0.035	326°45'13"	14164.751	-6.856
DG-72 (B290)	BASE 1 Final	DG-72	Fixed	0.019	0.032	327°15'14"	14637.300	-5.759
DG-73 (B291)	BASE 1 Final	DG-73	Fixed	0.019	0.032	327°48'44"	15147.929	-6.964
DG-73.1 (B292)	BASE 1 Final	DG-73.1	Fixed	0.020	0.033	328°16'45"	15798.266	-7.626
DG-74.1 (B293)	BASE 1 Final	DG-74.1	Fixed	0.020	0.034	329°36'26"	15991.387	-7.507
DG-74.2 (B294)	BASE 1 Final	DG-74.2	Fixed	0.019	0.032	330°36'44"	16374.105	-7.347
DG-w1 5 (B295)	BASE 1 Final	DG-w1 5	Fixed	0.019	0.031	330°38'14"	16410.291	-9.054
DG-76 (B296)	BASE 1 Final	DG-76	Fixed	0.019	0.030	329°38'52"	15112.087	-7.148
DG-66.4 (B305)	BASE 1 Final	DG-81	Fixed	0.016	0.024	331°03'29"	14101.717	-7.827
DG-82 (B298)	BASE 1 Final	DG-82	Fixed	0.019	0.030	333°40'59"	14067.386	-7.600
DG-63 (B299)	BASE 1 Final	DG-63	Fixed	0.018	0.031	335°46'11"	14428.411	-7.714
DG-64 (B300)	BASE 1 Final	DG-64	Fixed	0.017	0.035	337°35'23"	15077.452	-7.625
DG-65 (B301)	BASE 1 Final	DG-65	Fixed	0.017	0.025	337°59'42"	13656.151	-3.023
DG-66.1 (B302)	BASE 1 Final	DG-66.1	Fixed	0.017	0.023	340°07'28"	12685.289	4.933
DG-66.2 (B303)	BASE 1 Final	DG-66.2	Fixed	0.017	0.023	341°08'37"	13547.698	2.026
DG-66.3 (B304)	BASE 1 Final	DG-66.3	Fixed	0.017	0.023	342°01'40"	14385.196	3.202
nh b5 GCP 108 (B401)	BASE 1 Final	nh b5 GCP 108	Fixed	0.016	0.026	12°23'48"	11491.483	-5.878
nh b5 GCP 110 (B402)	BASE 1 Final	nh b5 GCP 110	Fixed	0.011	0.023	10°58'35"	10691.620	-6.848
nh b5 GCP 111 (B403)	BASE 1 Final	nh b5 GCP 111	Fixed	0.013	0.035	14°25'02"	10556.626	-6.823

nh b5 WL 1 (B404)	BASE 1 Final	nh b5 WL 1	Fixed	0.011	0.028	8°51'15"	11774.773	-8.887
nh b5 WL 1.2 (B405)	BASE 1 Final	nh b5 WL 1.2	Fixed	0.012	0.030	8°51'15"	11774.772	-8.880
nh b5 SH 1.2 top (B406)	BASE 1 Final	nh b5 SH 1.2 top	Fixed	0.011	0.025	4°52'37"	13297.886	-4.196
nh b1 GCP 90 (B341)	BASE 1 Final	nh b1 GCP 90	Fixed	0.017	0.027	246°45'11"	15566.672	7.354
nh b1 WL 39 (B342)	BASE 1 Final	nh b1 WL 39	Fixed	0.016	0.028	245°57'22"	16189.754	3.942
nh b1 GCP 74 (B343)	BASE 1 Final	nh b1 GCP 74	Fixed	0.015	0.028	247°14'57"	16489.686	3.647
nh b1 GCP 75 (B344)	BASE 1 Final	nh b1 GCP 75	Fixed	0.013	0.029	244°41'17"	16108.027	10.210
nh b1 GCP 76 (B345)	BASE 1 Final	nh b1 GCP 76	Fixed	0.015	0.034	241°59'56"	16132.848	17.127
nh b1 GCP 77 (B346)	BASE 1 Final	nh b1 GCP 77	Fixed	0.015	0.036	239°42'18"	15288.913	20.153
nh b1 GCP 79 (B347)	BASE 1 Final	nh b1 GCP 79	Fixed	0.016	0.040	236°43'12"	15289.655	31.384
nh b1 GCP 75.2 (B348)	BASE 1 Final	nh b1 GCP 75.2	Fixed	0.015	0.040	235°33'32"	14431.833	23.359
nh b1 GCP 85 (B351)	BASE 1 Final	nh b1 GCP 85	Fixed	0.013	0.025	244°41'42"	13850.315	17.776
nh b1 GCP 103.1 (B352)	BASE 1 Final	nh b1 GCP 103.1	Fixed	0.013	0.021	256°39'43"	12670.748	7.804
nh b1 GCP 103.3 (B353)	BASE 1 Final	nh b1 GCP 103.3	Fixed	0.018	0.030	258°29'38"	12755.646	2.340
nh b1 GCP 105 (B354)	BASE 1 Final	nh b1 GCP 105	Fixed	0.019	0.030	257°55'42"	11988.467	13.742
nh b1 WL 41 (B355)	BASE 1 Final	nh b1 WL 41	Fixed	0.014	0.022	256°35'28"	11670.190	18.326
nh b1 GCP 106 (B356)	BASE 1 Final	nh b1 GCP 106	Fixed	0.018	0.027	257°19'22"	11262.744	15.917
nh b1 WL 42 (B357)	BASE 1 Final	nh b1 WL 42	Fixed	0.032	0.055	258°12'06"	11325.819	12.711
nh b1 GCP 107 (B358)	BASE 1 Final	nh b1 GCP 107	Fixed	0.018	0.033	261°53'54"	11664.955	11.246
DG-GCP 109.2 (B359)	BASE 1 Final	DG-GCP 109.2	Fixed	0.019	0.035	268°17'54"	12895.122	0.754
nh b1 GCP 109.1 (B360)	BASE 1 Final	nh b1 GCP 109.1	Fixed	0.018	0.034	265°37'26"	12105.197	2.826
nh b2 GCP 89 (B361)	BASE 1 Final	nh b2 GCP 89	Fixed	0.015	0.030	255°25'17"	11007.234	22.732
nh b1 GCP 110.2 (B362)	BASE 1 Final	nh b1 GCP 110.2	Fixed	0.013	0.028	252°52'22"	10828.391	24.177
nh b1 GCP 110.1 (B363)	BASE 1 Final	nh b1 GCP 110.1	Fixed	0.013	0.028	249°50'51"	10678.109	25.686
nh b1 GCP 111.1 (B364)	BASE 1 Final	nh b1 GCP 111.1	Fixed	0.012	0.028	247°10'53"	10561.980	23.065
? (B365)	BASE 1 Final	?	Fixed	0.013	0.030	246°44'02"	11049.376	24.509
nh b1 GCP 101 (B366)	BASE 1 Final	nh b1 GCP 101	Fixed	0.014	0.023	250°29'21"	11480.663	27.088
nh b1 GCP 112 (B367)	BASE 1 Final	nh b1 GCP 112	Fixed	0.015	0.022	243°38'45"	10440.605	24.492
nh b1 GCP 113 (B368)	BASE 1 Final	nh b1 GCP 113	Fixed	0.015	0.021	238°46'53"	10351.083	23.588
nh b1 GCP 122 (B369)	BASE 1 Final	nh b1 GCP 122	Fixed	0.015	0.021	238°53'23"	9779.591	23.174

nh b1 GCP 121 (B370)	BASE 1 Final	nh b1 GCP 121	Fixed	0.016	0.021	234°51'41"	10275.486	23.369
nh b1 GCP 119 (B371)	BASE 1 Final	nh b1 GCP 119	Fixed	0.015	0.021	230°43'24"	10491.320	24.145
nh b1 GCP 29 (B238)	BASE 1 Final	nh b1 GCP 29	Fixed	0.014	0.023	221°42'15"	10780.970	37.468
nh b1 GCP 28 (B239)	BASE 1 Final	nh b1 GCP 28	Fixed	0.013	0.023	224°10'00"	9984.440	26.739
nh b1 GCP 27 (B240)	BASE 1 Final	nh b1 GCP 27	Fixed	0.013	0.023	227°04'10"	9222.245	26.643
nh b1 WL 23 (B241)	BASE 1 Final	nh b1 WL 23	Fixed	0.021	0.041	229°57'41"	8515.486	22.875
nh b1 GCP 26 (B242)	BASE 1 Final	nh b1 GCP 26	Fixed	0.012	0.022	227°36'54"	8302.737	24.204
nh b1 GCP 23 (B243)	BASE 1 Final	nh b1 GCP 23	Fixed	0.015	0.029	216°31'27"	10275.350	14.054
nh b1 GCP 24 (B244)	BASE 1 Final	nh b1 GCP 24	Fixed	0.015	0.029	212°01'40"	9813.470	7.004
nh b1 WL 24 (B245)	BASE 1 Final	nh b1 WL 24	Fixed	0.015	0.029	211°41'06"	9789.910	4.895
DG-104.1 (B246)	BASE 1 Final	DG-104.1	Fixed	0.013	0.029	277°29'02"	8725.334	24.079
nh b1 WL 18 (B226)	BASE 1 Final	nh b1 WL 18	Fixed	0.014	0.028	209°18'42"	10903.276	-0.690
nh b1 GCP 9.3 (B227)	BASE 1 Final	nh b1 GCP 9.3	Fixed	0.014	0.028	206°54'17"	11651.799	1.607
nh b1 WL 19 (B228)	BASE 1 Final	nh b1 WL 19	Fixed	0.015	0.028	211°24'01"	11562.450	1.240
nh b1 GCP 15 (B229)	BASE 1 Final	nh b1 GCP 15	Fixed	0.014	0.025	211°14'15"	11701.682	5.159
nh b1 GCP 12 (B230)	BASE 1 Final	nh b1 GCP 12	Fixed	0.015	0.026	209°24'14"	13236.281	11.790
nh b1 GCP 14 (B231)	BASE 1 Final	nh b1 GCP 14	Fixed	0.014	0.023	214°27'12"	11229.836	7.090
nh b1 WL 20 (B232)	BASE 1 Final	nh b1 WL 20	Fixed	0.014	0.023	214°07'32"	11389.191	3.990
nh b1 WL 21 (B233)	BASE 1 Final	nh b1 WL 21	Fixed	0.015	0.024	213°05'53"	12002.607	6.767
nh b1 GCP 13 (B234)	BASE 1 Final	nh b1 GCP 13	Fixed	0.014	0.023	212°30'25"	12344.586	8.271
nh b1 WL 22 (B235)	BASE 1 Final	nh b1 WL 22	Fixed	0.017	0.027	212°28'28"	12394.363	7.031
nh b1 GCP 16 (B236)	BASE 1 Final	nh b1 GCP 16	Fixed	0.015	0.027	215°47'09"	11867.631	7.866
nh b1 GCP 17 (B237)	BASE 1 Final	nh b1 GCP 17	Fixed	0.014	0.023	219°26'46"	11640.274	13.746
nh b1 GCP 9.1 (B220)	BASE 1 Final	nh b1 GCP 9.1	Fixed	0.015	0.035	204°23'52"	11540.496	0.678
nh b1 GCP 9.2 (B221)	BASE 1 Final	nh b1 GCP 9.2	Fixed	0.015	0.030	203°39'07"	12386.357	0.828
nh b1 GCP 10 (B222)	BASE 1 Final	nh b1 GCP 10	Fixed	0.015	0.030	206°47'03"	12828.270	6.935
nh b1 GCP 11 (B223)	BASE 1 Final	nh b1 GCP 11	Fixed	0.012	0.025	208°11'26"	12274.898	7.833
nh b1 WL 16 (B224)	BASE 1 Final	nh b1 WL 16	Fixed	0.016	0.033	206°48'54"	12254.421	1.745
nh b1 WL 17 (B225)	BASE 1 Final	nh b1 WL 17	Fixed	0.014	0.028	209°21'05"	11341.399	0.014
nh b1 WL 15 (B217)	BASE 1 Final	nh b1 WL 15	Fixed	0.014	0.026	209°19'01"	10611.736	-1.913
nh b1 GCP 8.2 (B218)	BASE 1 Final	nh b1 GCP 8.2	Fixed	0.014	0.026	210°06'26"	10656.473	0.401
nh b1 GCP 8.1 (B219)	BASE 1 Final	nh b1 GCP 8.1	Fixed	0.014	0.029	205°19'31"	10717.137	-0.628

nh b1 GCP 120.1 (B372)	BASE 1 Final	nh b1 GCP 120.1	Fixed	0.014	0.021	227°28'26"	10071.269	23.838
nh b1 GCP 120.2 (B373)	BASE 1 Final	nh b1 GCP 120.2	Fixed	0.014	0.022	231°06'48"	9708.682	23.086
nh b1 GCP 124 (B374)	BASE 1 Final	nh b1 GCP 124	Fixed	0.013	0.025	231°57'25"	8771.043	26.847
nh b1 GCP 123 (B375)	BASE 1 Final	nh b1 GCP 123	Fixed	0.012	0.025	235°25'16"	9224.774	21.348
nh b1 GCP 113.2 (B376)	BASE 1 Final	nh b1 GCP 113.2	Fixed	0.012	0.027	238°34'01"	11092.623	29.375
nh b1 GCP 118 (B377)	BASE 1 Final	nh b1 GCP 118	Fixed	0.011	0.027	233°46'25"	11263.240	26.364
nh b1 GCP 117 (B378)	BASE 1 Final	nh b1 GCP 117	Fixed	0.011	0.024	235°58'13"	11827.689	30.763
nh b1 WL 43 (B379)	BASE 1 Final	nh b1 WL 43	Fixed	0.014	0.030	234°15'51"	12126.475	35.408
nh b1 GCP 116 (B380)	BASE 1 Final	nh b1 GCP 116	Fixed	0.013	0.026	236°52'38"	12484.004	25.500
nh b1 WL 44 (B381)	BASE 1 Final	nh b1 WL 44	Fixed	0.014	0.028	238°55'11"	12371.290	21.807
nh b1 GCP 115 (B382)	BASE 1 Final	nh b1 GCP 115	Fixed	0.014	0.025	240°22'57"	12327.064	20.214
nh b1 GCP 114 (B383)	BASE 1 Final	nh b1 GCP 114	Fixed	0.014	0.023	242°07'29"	11517.903	25.706
nh b1 GCP 99 (B384)	BASE 1 Final	nh b1 GCP 99	Fixed	0.014	0.022	246°08'00"	11782.445	22.596
nh b1 GCP 100 (B385)	BASE 1 Final	nh b1 GCP 100	Fixed	0.014	0.022	249°05'41"	12144.280	23.731
nh b1 GCP 98 (B386)	BASE 1 Final	nh b1 GCP 98	Fixed	0.014	0.022	244°40'59"	12558.726	22.385
nh b1 GCP 97.2 (B387)	BASE 1 Final	nh b1 GCP 97.2	Fixed	0.014	0.023	247°15'10"	13288.228	20.899
nh b1 GCP 97.1 (B388)	BASE 1 Final	nh b1 GCP 97.1	Fixed	0.014	0.022	249°59'37"	12894.074	16.908
nh b1 GCP 84 (B389)	BASE 1 Final	nh b1 GCP 84	Fixed	0.014	0.024	241°49'41"	13910.256	22.713
nh b1 GCP 83 (B390)	BASE 1 Final	nh b1 GCP 83	Fixed	0.015	0.027	242°15'06"	13137.255	21.655
dg-GCP-b1-111.2 (B391)	BASE 1 Final	dg-GCP-b1-111.2	Fixed	0.018	0.029	246°44'03"	11049.333	24.455
dg-GCP-b1-80 (B392)	BASE 1 Final	dg-GCP-b1-80	Fixed	0.016	0.023	258°37'13"	8904.804	21.887
dg-GCP-b1-111 (B393)	BASE 1 Final	dg-GCP-b1-111	Fixed	0.016	0.026	263°48'36"	12735.267	-2.317
dg-GCP-b1-112 (B394)	BASE 1 Final	dg-GCP-b1-112	Fixed	0.012	0.027	298°33'39"	9660.658	3.422
dg-GCP-b1-113 (B395)	BASE 1 Final	dg-GCP-b1-113	Fixed	0.020	0.046	305°11'59"	11931.329	-5.463
dg-GCP-b1-55 (B396)	BASE 1 Final	dg-GCP-b1-55	Fixed	0.015	0.035	306°02'37"	12710.773	-6.560
dg-GCP-b1-56 (B397)	BASE 1 Final	dg-GCP-b1-56	Fixed	0.018	0.044	308°17'17"	12769.078	-6.863
dg-GCP-b1-57 (B398)	BASE 1 Final	dg-GCP-b1-57	Fixed	0.012	0.027	311°00'17"	12637.192	-6.912
dg-GCP-b1-58 (B399)	BASE 1 Final	dg-GCP-b1-58	Fixed	0.019	0.037	320°09'00"	12299.676	-5.258
dg-GCP-b1-59 (B400)	BASE 1 Final	dg-GCP-b1-59	Fixed	0.023	0.046	322°50'21"	13212.356	-4.659

DG-GCP 80 (B23)	BASE 1 Final	DG-GCP 80	Fixed	0.012	0.026	260°48'25"	8678.396	20.260
DG-GCP 76 (B24)	BASE 1 Final	DG-GCP 76	Fixed	0.013	0.028	256°28'58"	9781.491	21.590
DG-GCP 77 (B25)	BASE 1 Final	DG-GCP 77	Fixed	0.013	0.025	253°56'51"	9163.633	19.323
DG-GCP 74 (B26)	BASE 1 Final	DG-GCP 74	Fixed	0.013	0.023	250°37'57"	9144.795	21.267
DG-GCP 75 (B27)	BASE 1 Final	DG-GCP 75	Fixed	0.016	0.025	254°02'11"	10124.600	15.311
DG-WL2 (B28)	BASE 1 Final	DG-WL2	Fixed	0.015	0.024	254°00'19"	10121.506	14.166
DG-GCP 73 (B29)	BASE 1 Final	DG-GCP 73	Fixed	0.015	0.022	248°09'25"	10081.496	20.992
DG-GCP 88 (B30)	BASE 1 Final	DG-GCP 88	Fixed	0.014	0.021	259°38'39"	10521.093	16.369
DG-GCP 90 (B31)	BASE 1 Final	DG-GCP 90	Fixed	0.012	0.020	264°18'09"	10026.927	25.094
DG-GCP 91 (B32)	BASE 1 Final	DG-GCP 91	Fixed	0.013	0.023	264°08'27"	10955.517	9.473
DG-GCP 92 (B33)	BASE 1 Final	DG-GCP 92	Fixed	0.012	0.024	267°31'35"	11103.288	2.672
DG-GCP 109.1 (B34)	BASE 1 Final	DG-GCP 109.1	Fixed	0.011	0.024	265°30'22"	12069.203	2.696
DG-GCP 109.2 (B35)	BASE 1 Final	DG-GCP 109.2	Fixed	0.014	0.032	268°17'53"	12895.067	0.709
DG-GCP 95 (B36)	BASE 1 Final	DG-GCP 95	Fixed	0.012	0.027	267°22'34"	12273.802	0.662
DG-GCP 93 (B37)	BASE 1 Final	DG-GCP 93	Fixed	0.012	0.021	270°40'59"	11537.793	1.107
DG-GCP 94 (B38)	BASE 1 Final	DG-GCP 94	Fixed	0.013	0.022	274°13'01"	11560.129	0.376
DG-GCP 97 (B39)	BASE 1 Final	DG-GCP 97	Fixed	0.013	0.021	272°19'56"	10582.046	5.634
DG-WL 5 (B40)	BASE 1 Final	DG-WL 5	Fixed	0.014	0.022	270°25'56"	10358.282	8.491
DG-GCP 96 (B41)	BASE 1 Final	DG-GCP 96	Fixed	0.013	0.022	268°18'54"	10031.000	16.492
DG-WL6 (B42)	BASE 1 Final	DG-WL6	Fixed	0.014	0.023	268°56'42"	9986.656	10.571
DG-GCP 98 (B43)	BASE 1 Final	DG-GCP 98	Fixed	0.013	0.022	268°42'51"	9257.552	22.019
DG-GCP 85 (B44)	BASE 1 Final	DG-GCP 85	Fixed	0.013	0.022	273°10'39"	8952.862	22.386
DG-GCP 98.1 (B45)	BASE 1 Final	DG-GCP 98.1	Fixed	0.013	0.022	274°13'17"	9718.066	13.543
DG-WL 7 (B46)	BASE 1 Final	DG-WL 7	Fixed	0.014	0.025	267°46'51"	9341.526	15.637
nh GCP 1 (B47)	BASE 1 Final	nh GCP 1	Fixed	0.010	0.023	266°39'02"	788.053	-0.014
nh GCP 1 (B48)	BASE 1 Final	nh GCP 1	Fixed	0.009	0.020	266°39'03"	788.054	-0.022
nh GCP 3 (B49)	BASE 1 Final	nh GCP 3	Fixed	0.008	0.018	208°07'00"	546.593	3.384
nh GCP 4 (B50)	BASE 1 Final	nh GCP 4	Fixed	0.009	0.018	160°12'22"	1175.682	1.163
nh GCP 5 (B51)	BASE 1 Final	nh GCP 5	Fixed	0.011	0.020	163°15'26"	1848.213	0.611
nh GCP 6 (B52)	BASE 1 Final	nh GCP 6	Fixed	0.011	0.020	173°21'36"	2721.381	3.823
nh GCP 7 (B53)	BASE 1 Final	nh GCP 7	Fixed	0.009	0.015	187°49'16"	1769.821	2.443
nh GCP 8 (B54)	BASE 1 Final	nh GCP 8	Fixed	0.009	0.015	210°47'49"	1879.191	6.111
nh GCP 14 (B55)	BASE 1 Final	nh GCP 14	Fixed	0.008	0.013	229°19'01"	1451.983	4.324
nh GCP 8.1 (B56)	BASE 1 Final	nh GCP 8.1	Fixed	0.012	0.018	214°05'03"	2866.028	7.730
nh GCP 9 (B57)	BASE 1 Final	nh GCP 9	Fixed	0.009	0.014	201°54'36"	3649.726	6.907
nh GCP 10 (B58)	BASE 1 Final	nh GCP 10	Fixed	0.014	0.021	197°51'56"	4525.989	6.248
nh GCP 11 (B59)	BASE 1 Final	nh GCP 11	Fixed	0.009	0.015	218°57'43"	3412.277	2.538

nh GCP 12 (B60)	BASE 1 Final	nh GCP 12	Fixed	0.012	0.023	210°16'51"	4225.752	0.588
nh GCP 13 (B61)	BASE 1 Final	nh GCP 13	Fixed	0.012	0.025	215°11'45"	4353.617	0.082
nh GCP 15 (B62)	BASE 1 Final	nh GCP 15	Fixed	0.007	0.017	233°30'16"	2370.511	1.117
nh GCP 15.1 (B63)	BASE 1 Final	nh GCP 15.1	Fixed	0.007	0.017	233°30'16"	2370.516	1.122
nh GCP 16 (B64)	BASE 1 Final	nh GCP 16	Fixed	0.010	0.025	244°45'43"	1999.433	-0.554
nh WL 1 (B65)	BASE 1 Final	nh WL 1	Fixed	0.009	0.021	257°34'49"	1785.597	-2.523
nh GCP 17 (B66)	BASE 1 Final	nh GCP 17	Fixed	0.009	0.020	258°33'20"	1857.153	-1.744
nh GCP 18 (B67)	BASE 1 Final	nh GCP 18	Fixed	0.010	0.020	263°47'15"	2461.450	-0.131
nh GCP 19 (B68)	BASE 1 Final	nh GCP 19	Fixed	0.011	0.020	275°58'56"	3048.728	7.156
nh wl 2 (B69)	BASE 1 Final	nh wl 2	Fixed	0.011	0.020	271°39'51"	3048.073	6.832
nh GCP 20 (B70)	BASE 1 Final	nh GCP 20	Fixed	0.011	0.018	261°08'56"	3029.755	6.862
nh GCP 21 (B71)	BASE 1 Final	nh GCP 21	Fixed	0.011	0.018	244°28'19"	2929.076	2.024
nh GCP 25 (B72)	BASE 1 Final	nh GCP 25	Fixed	0.013	0.022	253°05'48"	3698.218	10.493
nh GCP 26 (B73)	BASE 1 Final	nh GCP 26	Fixed	0.014	0.026	264°47'40"	3925.374	18.559
nh GCP 24 (B74)	BASE 1 Final	nh GCP 24	Fixed	0.017	0.033	244°01'29"	4002.275	9.041
nh GCP 22 (B75)	BASE 1 Final	nh GCP 22	Fixed	0.017	0.029	234°05'59"	3358.765	2.316
nh GCP 27 (B76)	BASE 1 Final	nh GCP 27	Fixed	0.009	0.014	242°18'45"	4670.570	21.536
nh GCP 28 (B77)	BASE 1 Final	nh GCP 28	Fixed	0.016	0.025	236°47'04"	5323.024	24.287
nh GCP 28.2 (B78)	BASE 1 Final	nh GCP 28.2	Fixed	0.014	0.024	229°47'32"	4727.890	10.245
nh GCP 28.3 (B79)	BASE 1 Final	nh GCP 28.3	Fixed	0.016	0.031	228°01'47"	5020.436	11.526
nh GCP 29.1 (B80)	BASE 1 Final	nh GCP 29.1	Fixed	0.010	0.022	259°11'39"	4733.925	13.112
nh GCP 29.2 (B81)	BASE 1 Final	nh GCP 29.2	Fixed	0.012	0.027	251°01'32"	4675.995	21.759
nh GCP 30 (B82)	BASE 1 Final	nh GCP 30	Fixed	0.014	0.035	247°56'16"	5342.024	21.247
nh GCP 31 (B83)	BASE 1 Final	nh GCP 31	Fixed	0.016	0.034	245°44'01"	5751.288	22.135
nh GCP 31.2 (B84)	BASE 1 Final	nh GCP 31.2	Fixed	0.014	0.023	246°12'38"	6508.704	19.508
nh GCP 32 (B85)	BASE 1 Final	nh GCP 32	Fixed	0.013	0.019	252°30'36"	5794.313	23.401
nh GCP 32.2 (B86)	BASE 1 Final	nh GCP 32.2	Fixed	0.013	0.019	257°52'28"	5407.993	20.187
nh GCP 33 (B87)	BASE 1 Final	nh GCP 33	Fixed	0.012	0.019	266°51'55"	5125.083	12.787
nh GCP 34 (B88)	BASE 1 Final	nh GCP 34	Fixed	0.013	0.022	264°34'04"	6126.397	15.350
nh WL 3 (B89)	BASE 1 Final	nh WL 3	Fixed	0.013	0.023	269°49'23"	5748.781	11.006
nh GCP 36 (B90)	BASE 1 Final	nh GCP 36	Fixed	0.011	0.022	275°36'06"	5348.501	17.933
nh GCP 50 (B91)	BASE 1 Final	nh GCP 50	Fixed	0.012	0.026	278°57'25"	5996.142	12.108
nh GCP 49 (B92)	BASE 1 Final	nh GCP 49	Fixed	0.012	0.026	286°50'44"	5893.306	17.206
nh GCP 48 (B93)	BASE 1 Final	nh GCP 48	Fixed	0.012	0.026	294°51'17"	5895.003	15.114
nh GCP 47 (B94)	BASE 1 Final	nh GCP 47	Fixed	0.011	0.024	294°52'44"	5460.179	13.322
nh GCP 51 (B95)	BASE 1 Final	nh GCP 51	Fixed	0.015	0.034	294°52'08"	5463.837	13.438
nh GCP 52 (B96)	BASE 1 Final	nh GCP 52	Fixed	0.012	0.028	294°52'26"	5465.905	13.503
nh WL 4 (B97)	BASE 1 Final	nh WL 4	Fixed	0.012	0.026	295°49'55"	4878.151	7.659

nh GCP 46 (B98)	BASE 1 Final	nh GCP 46	Fixed	0.012	0.026	297°30'30"	4554.899	8.612
nh WL 5 (B99)	BASE 1 Final	nh WL 5	Fixed	0.013	0.028	294°07'55"	4549.463	8.511
nh GCP 38.1 (B100)	BASE 1 Final	nh GCP 38.1	Fixed	0.012	0.025	289°29'18"	4196.713	9.697
nh GCP 37 (B101)	BASE 1 Final	nh GCP 37	Fixed	0.013	0.027	284°41'44"	5005.722	13.814
nh GCP 37.2 (B102)	BASE 1 Final	nh GCP 37.2	Fixed	0.012	0.024	279°29'41"	4608.179	18.356
nh GCP 39 (B103)	BASE 1 Final	nh GCP 39	Fixed	0.012	0.021	278°41'26"	4283.887	18.353
nh GCP 40 (B104)	BASE 1 Final	nh GCP 40	Fixed	0.009	0.016	283°55'00"	3622.474	11.897
nh GCP 44 (B105)	BASE 1 Final	nh GCP 44	Fixed	0.010	0.017	313°39'28"	3802.171	4.713
nh GCP 44.1 (B106)	BASE 1 Final	nh GCP 44.1	Fixed	0.010	0.018	313°39'26"	3802.120	4.680
nh GCP 45 (B107)	BASE 1 Final	nh GCP 45	Fixed	0.010	0.018	322°11'45"	3220.007	-1.241
nh GCP 43 (B108)	BASE 1 Final	nh GCP 43	Fixed	0.008	0.015	302°50'37"	3178.222	0.209
nh GCP 41 (B109)	BASE 1 Final	nh GCP 41	Fixed	0.013	0.023	293°13'21"	2819.968	0.651
nh WL 6 (B110)	BASE 1 Final	nh WL 6	Fixed	0.013	0.021	275°51'47"	6072.853	9.715
nh GCP 51.1 (B111)	BASE 1 Final	nh GCP 51.1	Fixed	0.012	0.022	276°02'43"	6604.752	9.089
nh GCP 35 (B112)	BASE 1 Final	nh GCP 35	Fixed	0.012	0.021	270°42'42"	6047.575	11.845
nh WL 7 (B113)	BASE 1 Final	nh WL 7	Fixed	0.013	0.024	267°54'31"	6361.338	11.449
nh GCP 51.2 (B114)	BASE 1 Final	nh GCP 51.2	Fixed	0.015	0.028	268°52'02"	6822.960	10.594
nh GCP 51.3 (B115)	BASE 1 Final	nh GCP 51.3	Fixed	0.019	0.035	268°49'10"	6825.862	9.195
nh WI 8 (B116)	BASE 1 Final	nh WI 8	Fixed	0.017	0.034	268°49'03"	6825.877	9.124
DG-GCP 104.2 (B117)	BASE 1 Final	DG-GCP 104.2	Fixed	0.013	0.018	275°22'47"	7361.548	13.102
DG-GCP 104.3 (B118)	BASE 1 Final	DG-GCP 104.3	Fixed	0.014	0.019	273°59'18"	7982.497	20.116
DG-WL9 (B119)	BASE 1 Final	DG-WL9	Fixed	0.017	0.022	277°45'22"	10321.220	3.379
DG-GCP 99.1 (B120)	BASE 1 Final	DG-GCP 99.1	Fixed	0.017	0.023	278°15'38"	10499.064	3.935
DG-GCP 99.2 (B121)	BASE 1 Final	DG-GCP 99.2	Fixed	0.018	0.028	278°26'29"	11488.534	-3.305
DG-GCP 101 (B122)	BASE 1 Final	DG-GCP 101	Fixed	0.016	0.028	280°46'04"	12001.726	-1.899
DG-GCP 94 (B123)	BASE 1 Final	DG-GCP 94	Fixed	0.014	0.028	275°42'10"	12166.790	-1.191
DG-GCP 103 (B124)	BASE 1 Final	DG-GCP 103	Fixed	0.013	0.029	284°11'20"	11156.074	-3.201
DG-GCP 102 (B125)	BASE 1 Final	DG-GCP 102	Fixed	0.014	0.033	281°19'43"	11310.168	-3.463
DG-GCP 99.2.1 (B126)	BASE 1 Final	DG-GCP 99.2.1	Fixed	0.014	0.035	280°27'53"	10460.861	3.933
DG-GCP 105 (B127)	BASE 1 Final	DG-GCP 105	Fixed	0.013	0.026	279°29'13"	9602.247	14.130
DG-GCP 109 (B128)	BASE 1 Final	DG-GCP 109	Fixed	0.018	0.031	287°39'06"	11319.256	-5.305
DG-GCP 111 (B129)	BASE 1 Final	DG-GCP 111	Fixed	0.016	0.029	291°47'58"	10492.955	-1.261
DG-GCP 110 (B130)	BASE 1 Final	DG-GCP 110	Fixed	0.017	0.030	291°56'02"	10671.548	-2.169
DG-GCP 108 (B131)	BASE 1 Final	DG-GCP 108	Fixed	0.017	0.029	286°57'58"	10618.568	0.715

DG-GCP 107 (B132)	BASE 1 Final	DG-GCP 107	Fixed	0.016	0.027	285°48'43"	9641.404	10.693
DG-GCP 112 (B133)	BASE 1 Final	DG-GCP 112	Fixed	0.015	0.024	290°17'14"	8737.769	9.319
DG-WL (B134)	BASE 1 Final	DG-WL	Fixed	0.015	0.025	290°17'45"	8732.728	7.653
DG-113 (B135)	BASE 1 Final	DG-113	Fixed	0.016	0.025	293°40'19"	8670.542	6.952
DG-51 (B136)	BASE 1 Final	DG-51	Fixed	0.016	0.025	296°02'42"	9286.114	3.006
DG-WL 2 (B137)	BASE 1 Final	DG-WL 2	Fixed	0.016	0.028	296°00'23"	9298.938	1.761
DG-GCP 115 (B138)	BASE 1 Final	DG-GCP 115	Fixed	0.019	0.030	298°16'18"	10006.788	2.507
DG-GCP 52 (B139)	BASE 1 Final	DG-GCP 52	Fixed	0.018	0.029	300°12'20"	10572.093	0.734
DG-GCP 53 (B140)	BASE 1 Final	DG-GCP 53	Fixed	0.018	0.028	302°32'25"	10856.593	-1.715
DG-WL 4 (B141)	BASE 1 Final	DG-WL 4	Fixed	0.018	0.028	302°34'02"	10863.249	-3.043
DG-GCP 116 (B142)	BASE 1 Final	DG-GCP 116	Fixed	0.018	0.029	298°56'39"	10821.200	-0.547
DG-GCP 116.1 (B143)	BASE 1 Final	DG-GCP 116.1	Fixed	0.015	0.026	294°13'15"	10065.735	-0.039
DG-GCP 27 (B144)	BASE 1 Final	DG-GCP 27	Fixed	0.012	0.028	311°57'49"	8792.753	12.911
DG-GCP 45 (B145)	BASE 1 Final	DG-GCP 45	Fixed	0.013	0.027	310°17'56"	9438.737	5.990
DG-GCP 50 (B146)	BASE 1 Final	DG-GCP 50	Fixed	0.015	0.023	297°28'28"	8352.294	16.239
DG-GCP 24 (B147)	BASE 1 Final	DG-GCP 24	Fixed	0.018	0.028	303°51'51"	8526.713	12.812
DG-GCP 10 (B148)	BASE 1 Final	DG-GCP 10	Fixed	0.017	0.032	334°25'53"	5369.124	-4.024
DG-WL 9 (B149)	BASE 1 Final	DG-WL 9	Fixed	0.018	0.035	335°16'39"	5345.818	-4.826
DG-GCP 7 (B150)	BASE 1 Final	DG-GCP 7	Fixed	0.017	0.033	332°30'59"	4565.678	-1.679
DG-GCP 1 (B151)	BASE 1 Final	DG-GCP 1	Fixed	0.017	0.034	323°42'27"	4061.574	0.658
DG-WL 10 (B152)	BASE 1 Final	DG-WL 10	Fixed	0.016	0.032	318°44'01"	4175.899	-1.215
DG-GCP 2 (B153)	BASE 1 Final	DG-GCP 2	Fixed	0.017	0.033	312°43'01"	4402.535	3.273
DG-GCP 3 (B154)	BASE 1 Final	DG-GCP 3	Fixed	0.018	0.036	305°52'46"	4762.181	5.588
DG-WL11 (B155)	BASE 1 Final	DG-WL11	Fixed	0.015	0.028	305°53'54"	4762.017	4.240
DG-GCP 5 (B156)	BASE 1 Final	DG-GCP 5	Fixed	0.016	0.029	306°40'17"	5584.779	7.809
DG-GCP 4 (B157)	BASE 1 Final	DG-GCP 4	Fixed	0.013	0.024	298°58'54"	5452.197	10.612
DG-GCP 6 (B158)	BASE 1 Final	DG-GCP 6	Fixed	0.014	0.024	317°25'29"	5114.273	3.076
DG-WL 12 (B159)	BASE 1 Final	DG-WL 12	Fixed	0.014	0.024	317°26'12"	5112.644	1.976
DG-GCP 9 (B160)	BASE 1 Final	DG-GCP 9	Fixed	0.014	0.024	321°57'30"	5942.060	7.505
DG-GCP 8 (B161)	BASE 1 Final	DG-GCP 8	Fixed	0.013	0.022	327°03'58"	5167.111	3.633
DG-GCP 12 (B162)	BASE 1 Final	DG-GCP 12	Fixed	0.013	0.022	329°07'39"	5897.361	2.812
DG-GCP 13 (B163)	BASE 1 Final	DG-GCP 13	Fixed	0.012	0.020	328°12'47"	6602.592	4.688
DG-GCP 13.1 (B164)	BASE 1 Final	DG-GCP 13.1	Fixed	0.013	0.022	334°05'43"	6787.475	-4.429
DG-WL13 (B165)	BASE 1 Final	DG-WL13	Fixed	0.015	0.028	326°19'53"	7185.881	-0.829
? (B166)	BASE 1 Final	?	Fixed	0.011	0.020	328°46'23"	7110.681	4.660
DG-GCP 16.1 (B167)	BASE 1 Final	DG-GCP 16.1	Fixed	0.014	0.026	322°22'19"	7483.796	3.866
DG-WL15 (B168)	BASE 1 Final	DG-WL15	Fixed	0.015	0.027	322°34'25"	7499.625	1.354

DG-GCP 17 (B169)	BASE 1 Final	DG-GCP 17	Fixed	0.014	0.027	316°19'41"	7046.329	11.283
DG-GCP 18 (B170)	BASE 1 Final	DG-GCP 18	Fixed	0.014	0.027	309°19'47"	6693.482	9.110
DG-GCP 19 (B171)	BASE 1 Final	DG-GCP 19	Fixed	0.014	0.028	301°53'39"	6464.123	10.849
nh GCP 8.2 (B172)	BASE 1 Final	nh GCP 8.2	Fixed	0.010	0.015	192°43'39"	2594.981	2.019
nh GCP 6.2 (B173)	BASE 1 Final	nh GCP 6.2	Fixed	0.012	0.017	186°01'44"	3238.800	2.058
nh GCP 6.1 (B174)	BASE 1 Final	nh GCP 6.1	Fixed	0.013	0.020	189°26'54"	3699.510	4.154
nh GCP 51 (B176)	BASE 1 Final	nh GCP 51	Fixed	0.012	0.025	268°52'01"	6822.954	10.602
nh wl 8 (B177)	BASE 1 Final	nh wl 8	Fixed	0.012	0.026	268°57'22"	6830.719	9.156
nh wl 9 (B178)	BASE 1 Final	nh wl 9	Fixed	0.012	0.027	266°13'08"	6756.496	9.519
nh GCP 52 (B179)	BASE 1 Final	nh GCP 52	Fixed	0.015	0.041	261°28'50"	7021.439	12.457
nh WL 10 (B180)	BASE 1 Final	nh WL 10	Fixed	0.020	0.056	262°02'27"	6998.255	11.026
nh GCP 53 (B181)	BASE 1 Final	nh GCP 53	Fixed	0.015	0.039	257°24'09"	6474.916	22.240
nh GCP 54 (B183)	BASE 1 Final	nh GCP 54	Fixed	0.011	0.022	252°44'23"	6780.622	17.774
nh GCP 55 (B184)	BASE 1 Final	nh GCP 55	Fixed	0.015	0.023	251°43'59"	7496.479	14.710
nh GCP 56 (B185)	BASE 1 Final	nh GCP 56	Fixed	0.012	0.019	247°08'33"	7233.917	17.504
nh GCP 57 (B186)	BASE 1 Final	nh GCP 57	Fixed	0.015	0.027	243°09'18"	7653.934	18.539
nh GCP 58 (B187)	BASE 1 Final	nh GCP 58	Fixed	0.014	0.026	239°40'56"	7183.384	21.506
nh GCP 59 (B188)	BASE 1 Final	nh GCP 59	Fixed	0.015	0.027	237°32'13"	7473.633	20.783
nh b1 GCP 1 (B189)	BASE 1 Final	nh b1 GCP 1	Fixed	0.025	0.044	212°45'42"	7291.690	20.757
nh b1 GCP 1 (B190)	BASE 1 Final	nh b1 GCP 1	Fixed	0.016	0.029	212°45'42"	7291.681	20.751
nh b1 GCP 1.2 (B191)	BASE 1 Final	nh b1 GCP 1.2	Fixed	0.012	0.019	217°16'57"	7526.100	14.120
nh b1 GCP 5.2 (B192)	BASE 1 Final	nh b1 GCP 5.2	Fixed	0.014	0.022	211°17'45"	8111.030	10.319
nh b1 GCP 5.2 (B193)	BASE 1 Final	nh b1 GCP 5.2	Fixed	0.013	0.021	211°17'44"	8111.028	10.311
nh b1 wl 1 (B194)	BASE 1 Final	nh b1 wl 1	Fixed	0.014	0.025	218°37'11"	7603.696	13.030
nh b1 GCP 2 (B195)	BASE 1 Final	nh b1 GCP 2	Fixed	0.014	0.025	222°23'35"	7843.694	18.138
nh b1 WL 2 (B196)	BASE 1 Final	nh b1 WL 2	Fixed	0.014	0.024	222°22'42"	7863.175	17.312
nh b1 WL 3 (B197)	BASE 1 Final	nh b1 WL 3	Fixed	0.014	0.025	220°34'34"	8325.305	18.565
nh b1 WL 4 (B198)	BASE 1 Final	nh b1 WL 4	Fixed	0.014	0.026	220°40'37"	8311.787	19.036
nh b1 GCP 3 (B199)	BASE 1 Final	nh b1 GCP 3	Fixed	0.014	0.028	219°37'16"	8596.605	23.951
nh b1 WI 5 (B200)	BASE 1 Final	nh b1 WI 5	Fixed	0.014	0.028	224°05'42"	8604.356	21.988
nh b1 GCP 3.2 (B201)	BASE 1 Final	nh b1 GCP 3.2	Fixed	0.013	0.028	223°00'45"	8905.129	22.662
nh b1 GCP 3.3 (B202)	BASE 1 Final	nh b1 GCP 3.3	Fixed	0.011	0.024	220°11'49"	9493.715	16.446
nh b1 GCP 25 (B203)	BASE 1 Final	nh b1 GCP 25	Fixed	0.014	0.026	215°31'02"	9176.844	7.942
nh b1 WL 6 (B204)	BASE 1 Final	nh b1 WL 6	Fixed	0.014	0.027	215°27'30"	9233.578	6.756
nh b1 WL 7 (B205)	BASE 1 Final	nh b1 WL 7	Fixed	0.017	0.031	215°00'34"	9149.748	6.221
nh b1 GCP 4 (B206)	BASE 1 Final	nh b1 GCP 4	Fixed	0.016	0.028	214°22'03"	8259.437	8.451

Vector Components (Mark to Mark)

nh b1 GCP 5.1 (B207)	BASE 1 Final	nh b1 GCP 5.1	Fixed	0.014	0.023	211°05'40"	8918.002	2.681
nh b1 WL 8 (B208)	BASE 1 Final	nh b1 WL 8	Fixed	0.015	0.023	211°00'11"	8913.905	1.648
nh b1 WL 9 (B209)	BASE 1 Final	nh b1 WL 9	Fixed	0.017	0.026	210°43'05"	9131.840	1.242
nh b1 WL 10 (B210)	BASE 1 Final	nh b1 WL 10	Fixed	0.016	0.025	210°36'39"	9197.824	1.426
nh b1 WL 11 (B211)	BASE 1 Final	nh b1 WL 11	Fixed	0.020	0.030	207°00'37"	9287.364	-2.573
nh b1 GCP 6 (B212)	BASE 1 Final	nh b1 GCP 6	Fixed	0.019	0.028	207°06'45"	9285.424	-1.330
nh b1 WL 12 (B213)	BASE 1 Final	nh b1 WL 12	Fixed	0.022	0.029	210°12'09"	9698.571	0.172
nh b1 WL 13 (B214)	BASE 1 Final	nh b1 WL 13	Fixed	0.016	0.024	209°11'26"	10117.910	-2.973
nh b1 WL 14 (B215)	BASE 1 Final	nh b1 WL 14	Fixed	0.014	0.024	206°27'57"	9907.751	-3.394
nh b1 GCP 7 (B216)	BASE 1 Final	nh b1 GCP 7	Fixed	0.013	0.023	206°29'03"	9902.494	-1.731

Acceptance Summary

Processed	Passed	Flag	Fail
587	587	0	0

Base Station 2

Project file data		Coordinate System	
Name:	E:\My Documents\2 Agri-Sense\1 Agrisense Jobs\2 Quoted Jobs\Beliez\Drone\GCP Data\Base 2.vce	Name:	World wide/UTM
Size:	740 KB	Datum:	WGS 1984
Modified:	2018/03/01 10:17:05 PM (UTC:-6)	Zone:	16 North
Time zone:	Central Standard Time	Geoid:	EGM96 (Global)
Reference number:		Vertical datum:	
Description:			
Comment 1:			
Comment 2:			
Comment 3:			

Baseline Processing Report

Processing Summary

Observation	From	To	Solution Type	H. Prec. (Meter)	V. Prec. (Meter)	Geodetic Az.	Ellipsoid Dist. (Meter)	ΔHeight (Meter)
nh b10 GCP 44 (B125)	BASE 2 FINAL	nh b10 GCP 44	Fixed	0.010	0.015	358°00'26"	443.799	-0.573
nh b10 GCP 45 (B126)	BASE 2 FINAL	nh b10 GCP 45	Fixed	0.006	0.010	71°33'58"	723.920	1.857
nh b10 GCP 43 (B127)	BASE 2 FINAL	nh b10 GCP 43	Fixed	0.009	0.017	88°55'25"	1367.296	2.521
nh b10 GCP 47 (B128)	BASE 2 FINAL	nh b10 GCP 47	Fixed	0.008	0.015	136°47'08"	1090.703	3.088
nh b10 GCP 48 (B129)	BASE 2 FINAL	nh b10 GCP 48	Fixed	0.009	0.020	166°36'53"	1684.378	-2.166
nh b10 GCP 46 (B130)	BASE 2 FINAL	nh b10 GCP 46	Fixed	0.007	0.015	121°56'53"	444.660	6.179
nh b10 GCP 49 (B131)	BASE 2 FINAL	nh b10 GCP 49	Fixed	0.008	0.018	194°28'15"	888.758	-1.194
nh b10 GCP 50 (B132)	BASE 2 FINAL	nh b10 GCP 50	Fixed	0.008	0.019	257°12'42"	798.021	-1.441
nh b10 GCP 51 (B133)	BASE 2 FINAL	nh b10 GCP 51	Fixed	0.008	0.021	227°51'22"	1457.133	-2.339
nh b10 WL 1 (B134)	BASE 2 FINAL	nh b10 WL 1	Fixed	0.008	0.029	246°01'02"	1595.776	-2.772
nh b10 GCP 52.2 (B135)	BASE 2 FINAL	nh b10 GCP 52.2	Fixed	0.009	0.028	249°20'47"	1894.598	-2.090
nh b10 GCP 52.1 (B136)	BASE 2 FINAL	nh b10 GCP 52.1	Fixed	0.009	0.029	249°35'22"	1890.534	-2.094
nh b10 GCP 57 (B137)	BASE 2 FINAL	nh b10 GCP 57	Fixed	0.011	0.034	245°57'19"	3049.054	-1.370
nh b10 WL 2 (B138)	BASE 2 FINAL	nh b10 WL 2	Fixed	0.011	0.032	251°54'39"	3381.409	-1.550
nh b10 GCP 60 (B139)	BASE 2 FINAL	nh b10 GCP 60	Fixed	0.012	0.032	260°59'14"	3671.181	-1.096
DG-34 (B88)	BASE 2 FINAL	DG-34	Fixed	0.013	0.024	132°25'17"	1913.620	3.317
DG-35 (B89)	BASE 2 FINAL	DG-35	Fixed	0.015	0.029	110°21'00"	1991.919	2.827

DG-97 (B90)	BASE 2 FINAL	DG-97	Fixed	0.017	0.035	95°13'58"	2250.957	3.756
DG-36 (B91)	BASE 2 FINAL	DG-36	Fixed	0.018	0.038	82°23'14"	2671.896	4.410
DG-37 (B92)	BASE 2 FINAL	DG-37	Fixed	0.020	0.043	74°30'58"	3129.383	3.882
DG-102.1 (B93)	BASE 2 FINAL	DG-102.1	Fixed	0.018	0.040	65°27'29"	2564.536	2.159
DG-38 (B94)	BASE 2 FINAL	DG-38	Fixed	0.016	0.034	47°12'22"	1940.168	2.340
DG-40 (B95)	BASE 2 FINAL	DG-40	Fixed	0.015	0.034	14°34'49"	1666.013	-0.985
DG-3 (B96)	BASE 2 FINAL	DG-3	Fixed	0.015	0.037	358°29'44"	1702.868	1.713
DG-2 (B97)	BASE 2 FINAL	DG-2	Fixed	0.014	0.036	322°48'12"	1415.544	0.703
DG-11 (B98)	BASE 2 FINAL	DG-11	Fixed	0.015	0.039	308°34'39"	1921.257	4.381
DG-13 (B99)	BASE 2 FINAL	DG-13	Fixed	0.008	0.024	311°24'59"	2555.759	3.443
DG-15 (B101)	BASE 2 FINAL	DG-15	Fixed	0.020	0.064	289°52'33"	2274.295	4.558
DG-16 (B102)	BASE 2 FINAL	DG-16	Fixed	0.020	0.064	280°39'02"	2893.023	1.695
DG-11.1 (B103)	BASE 2 FINAL	DG-11.1	Fixed	0.023	0.069	274°30'24"	3611.383	0.407
DG-6.1 (B104)	BASE 2 FINAL	DG-6.1	Fixed	0.024	0.069	271°42'43"	4167.033	0.455
DG-66 (B105)	BASE 2 FINAL	DG-66	Fixed	0.020	0.055	268°07'22"	5059.229	-0.384
DG-69 (B106)	BASE 2 FINAL	DG-69	Fixed	0.019	0.049	261°36'03"	5656.258	7.002
DG-70 (B107)	BASE 2 FINAL	DG-70	Fixed	0.019	0.030	199°40'13"	13684.243	-3.232
DG-78 (B108)	BASE 2 FINAL	DG-78	Fixed	0.019	0.029	199°40'27"	13683.765	-3.218
DG-79 (B109)	BASE 2 FINAL	DG-79	Fixed	0.018	0.029	199°33'36"	11113.900	-3.264
DG-80 (B110)	BASE 2 FINAL	DG-80	Fixed	0.018	0.029	199°33'25"	11112.701	-3.282
DG-83 (B111)	BASE 2 FINAL	DG-83	Fixed	0.018	0.031	189°25'06"	8603.049	-3.372
DG-84 (B112)	BASE 2 FINAL	DG-84	Fixed	0.019	0.032	189°25'05"	8603.175	-3.358
DG-93 (B113)	BASE 2 FINAL	DG-93	Fixed	0.020	0.038	175°33'47"	6315.533	-3.347
DG-94 (B114)	BASE 2 FINAL	DG-94	Fixed	0.021	0.039	175°33'43"	6315.399	-3.364
DG-95 (B115)	BASE 2 FINAL	DG-95	Fixed	0.018	0.033	159°16'06"	4532.758	-3.447
DG-98 (B116)	BASE 2 FINAL	DG-98	Fixed	0.021	0.039	159°16'00"	4532.828	-3.441
DG-100 (B117)	BASE 2 FINAL	DG-100	Fixed	0.016	0.035	117°22'30"	3439.850	-3.486
DG-101 (B118)	BASE 2 FINAL	DG-101	Fixed	0.017	0.036	117°21'50"	3438.120	-3.532

DG-102 (B119)	BASE 2 FINAL	DG-102	Fixed	0.019	0.043	72°01'53"	6153.107	-3.498
DG-103 (B120)	BASE 2 FINAL	DG-103	Fixed	0.016	0.036	72°01'45"	6152.997	-3.495
DG-105 (B122)	BASE 2 FINAL	DG-105	Fixed	0.014	0.030	34°53'49"	10282.342	-3.436
DG-106 (B123)	BASE 2 FINAL	DG-106	Fixed	0.017	0.034	36°09'59"	11947.775	-3.500
DG-107 (B124)	BASE 2 FINAL	DG-107	Fixed	0.019	0.036	36°09'54"	11948.296	-3.535
nh GCP b5 41 (B164)	BASE 2 FINAL	nh GCP b5 41	Fixed	0.007	0.017	76°17'41"	1695.665	4.287
nh GCP b9 90 (B165)	BASE 2 FINAL	nh GCP b9 90	Fixed	0.014	0.033	172°41'45"	3748.020	2.607
nh GCP b9 89 (B166)	BASE 2 FINAL	nh GCP b9 89	Fixed	0.012	0.026	163°06'29"	3137.930	-0.323
nh b9 WL 1 (B167)	BASE 2 FINAL	nh b9 WL 1	Fixed	0.015	0.028	157°33'55"	3815.284	-3.298
nh b9 GCP 91 (B168)	BASE 2 FINAL	nh b9 GCP 91	Fixed	0.015	0.026	157°23'12"	3830.917	-2.940
nh b9 WL 2 (B169)	BASE 2 FINAL	nh b9 WL 2	Fixed	0.013	0.022	155°28'50"	2157.415	-3.236
nh b9 GCP 93 (B170)	BASE 2 FINAL	nh b9 GCP 93	Fixed	0.015	0.025	147°51'43"	2725.164	-2.856
nh b9 GCP 94 (B171)	BASE 2 FINAL	nh b9 GCP 94	Fixed	0.016	0.027	135°55'44"	2761.992	-2.254
nh b9 GCP 96 (B172)	BASE 2 FINAL	nh b9 GCP 96	Fixed	0.017	0.027	122°51'43"	2596.384	-2.148
nh b9 GCP 98 (B173)	BASE 2 FINAL	nh b9 GCP 98	Fixed	0.017	0.025	103°25'09"	2676.124	-1.627
nh b9 GCP 99 (B174)	BASE 2 FINAL	nh b9 GCP 99	Fixed	0.018	0.026	93°59'38"	3099.954	0.101
nh b9 GCP 100 (B175)	BASE 2 FINAL	nh b9 GCP 100	Fixed	0.020	0.032	87°36'05"	3778.692	-2.918
nh b9 GCP 101 (B176)	BASE 2 FINAL	nh b9 GCP 101	Fixed	0.021	0.035	78°35'45"	4038.236	-0.649
nh b10 GCP 60 (B177)	BASE 2 FINAL	nh b10 GCP 60	Fixed	0.015	0.028	20°13'33"	2895.138	1.736
nh b10 GCP 59 (B178)	BASE 2 FINAL	nh b10 GCP 59	Fixed	0.017	0.033	27°31'56"	3746.952	3.763
nh b9 GCP 105 (B179)	BASE 2 FINAL	nh b9 GCP 105	Fixed	0.017	0.036	37°42'09"	3796.627	5.203
nh b10 GCP 58 (B180)	BASE 2 FINAL	nh b10 GCP 58	Fixed	0.013	0.029	32°16'54"	4564.708	6.226
nh b10 GCP 56.2 (B181)	BASE 2 FINAL	nh b10 GCP 56.2	Fixed	0.011	0.025	33°06'43"	5044.108	7.629
nh b10 GCP 56.1 (B182)	BASE 2 FINAL	nh b10 GCP 56.1	Fixed	0.012	0.027	33°35'35"	5621.657	7.159
nh b10 GCP 50 (B183)	BASE 2 FINAL	nh b10 GCP 50	Fixed	0.014	0.027	36°47'52"	6395.903	6.544
nh b10 GCP 49 (B184)	BASE 2 FINAL	nh b10 GCP 49	Fixed	0.014	0.026	38°59'51"	7220.570	4.302
nh b10 GCP 41 (B185)	BASE 2 FINAL	nh b10 GCP 41	Fixed	0.016	0.027	39°31'04"	8501.903	-0.856
nh b10 WL 1 (B186)	BASE 2 FINAL	nh b10 WL 1	Fixed	0.015	0.026	39°09'44"	8730.377	-3.462

nh b9 GCP 109 (B187)	BASE 2 FINAL	nh b9 GCP 109	Fixed	0.014	0.020	42°02'12"	7914.779	-2.285
nh b9 GCP 111 (B188)	BASE 2 FINAL	nh b9 GCP 111	Fixed	0.013	0.028	42°30'56"	6423.165	0.246
nh b9 GCP 112 (B189)	BASE 2 FINAL	nh b9 GCP 112	Fixed	0.012	0.026	45°00'23"	5683.942	-1.799
nh b9 GCP 113 (B190)	BASE 2 FINAL	nh b9 GCP 113	Fixed	0.012	0.028	51°41'57"	5422.180	-2.142
nh b9 GCP 114 (B191)	BASE 2 FINAL	nh b9 GCP 114	Fixed	0.013	0.027	58°07'27"	5793.976	-1.828
nh b9 GCP 115 (B192)	BASE 2 FINAL	nh b9 GCP 115	Fixed	0.014	0.030	54°28'47"	6601.703	-1.776
nh b9 GCP 119 (B193)	BASE 2 FINAL	nh b9 GCP 119	Fixed	0.014	0.029	58°22'47"	4829.748	1.339
? (B194)	BASE 2 FINAL	?	Fixed	0.011	0.024	52°56'22"	4122.041	-1.867
nh b5 GCP 69 (B47)	BASE 2 FINAL	nh b5 GCP 69	Fixed	0.014	0.023	247°46'31"	5865.353	-1.103
nh b5 GCP 70 (B48)	BASE 2 FINAL	nh b5 GCP 70	Fixed	0.011	0.020	244°37'11"	5266.465	-1.411
nh b5 GCP 71 (B49)	BASE 2 FINAL	nh b5 GCP 71	Fixed	0.010	0.019	238°55'17"	4790.202	-1.161
nh b5 GCP 72 (B50)	BASE 2 FINAL	nh b5 GCP 72	Fixed	0.009	0.021	231°13'17"	4675.652	-1.332
nh b5 GCP 74 (B51)	BASE 2 FINAL	nh b5 GCP 74	Fixed	0.009	0.021	244°36'18"	4042.752	-1.622
nh b5 GCP 73 (B52)	BASE 2 FINAL	nh b5 GCP 73	Fixed	0.009	0.021	230°40'24"	3877.918	-0.348
nh b5 GCP 75 (B53)	BASE 2 FINAL	nh b5 GCP 75	Fixed	0.009	0.022	219°23'02"	3600.525	0.769
nh b5 GCP 79 (B54)	BASE 2 FINAL	nh b5 GCP 79	Fixed	0.011	0.029	220°00'19"	4295.726	-2.577
nh b5 GCP 82 (B55)	BASE 2 FINAL	nh b5 GCP 82	Fixed	0.011	0.025	217°46'06"	5118.268	-2.312
nh b5 GCP 84 (B56)	BASE 2 FINAL	nh b5 GCP 84	Fixed	0.012	0.024	211°02'36"	5602.182	-0.411
dg-b4-10 (B1)	BASE 2 FINAL	dg-b4-10	Fixed	0.013	0.029	256°54'02"	6352.872	5.477
dg-b4-11 (B2)	BASE 2 FINAL	dg-b4-11	Fixed	0.014	0.031	265°00'31"	6749.692	9.648
dg-b4-12 (B3)	BASE 2 FINAL	dg-b4-12	Fixed	0.015	0.034	258°19'33"	7148.769	12.983
dg-b4-13 (B4)	BASE 2 FINAL	dg-b4-13	Fixed	0.015	0.035	254°20'30"	7666.721	13.549
dg-b4-9 (B5)	BASE 2 FINAL	dg-b4-9	Fixed	0.014	0.035	251°03'38"	6946.870	11.025
dg-b4-8 (B6)	BASE 2 FINAL	dg-b4-8	Fixed	0.014	0.035	248°02'25"	7329.042	11.157
dg-b4-7 (B7)	BASE 2 FINAL	dg-b4-7	Fixed	0.014	0.034	245°26'19"	7736.123	8.309
dg-b4-17 (B8)	BASE 2 FINAL	dg-b4-17	Fixed	0.014	0.036	250°21'35"	8115.051	11.012
dg-b4-16 (B9)	BASE 2 FINAL	dg-b4-16	Fixed	0.013	0.032	255°53'28"	8681.243	14.177
dg-b4-20 (B10)	BASE 2 FINAL	dg-b4-20	Fixed	0.014	0.033	252°55'18"	9325.344	11.830

dg-b4-19 (B11)	BASE 2 FINAL	dg-b4-19	Fixed	0.014	0.034	249°07'47"	9204.935	13.532
dg-b4-18.1 (B12)	BASE 2 FINAL	dg-b4-18.1	Fixed	0.014	0.030	243°37'08"	9298.902	8.213
dg-b4-18.2 (B13)	BASE 2 FINAL	dg-b4-18.2	Fixed	0.013	0.026	246°58'58"	8643.856	10.698
dg-b4-21 (B14)	BASE 2 FINAL	dg-b4-21	Fixed	0.015	0.027	251°59'24"	10023.220	10.432
dg-b4-22 (B15)	BASE 2 FINAL	dg-b4-22	Fixed	0.016	0.027	248°52'45"	10383.131	11.290
dg-b4-32 (B16)	BASE 2 FINAL	dg-b4-32	Fixed	0.017	0.029	253°55'34"	10825.828	3.450
dg-b4-33 (B17)	BASE 2 FINAL	dg-b4-33	Fixed	0.018	0.033	250°34'50"	11178.469	2.652
dg-b4-34 (B18)	BASE 2 FINAL	dg-b4-34	Fixed	0.017	0.031	257°15'32"	10046.179	4.558
dg-b4-36 (B19)	BASE 2 FINAL	dg-b4-36	Fixed	0.018	0.032	260°54'42"	9337.544	9.405
dg-b4-37 (B20)	BASE 2 FINAL	dg-b4-37	Fixed	0.018	0.030	265°32'37"	8618.324	10.779
dg-b4-38 (B21)	BASE 2 FINAL	dg-b4-38	Fixed	0.018	0.028	260°25'51"	7909.284	15.765
dg-b4-15 (B22)	BASE 2 FINAL	dg-b4-15	Fixed	0.018	0.027	260°10'41"	8601.678	13.780
dg-b4-39 (B23)	BASE 2 FINAL	dg-b4-39	Fixed	0.017	0.024	266°42'12"	7783.238	14.067
dg-b4-40 (B24)	BASE 2 FINAL	dg-b4-40	Fixed	0.015	0.031	269°39'11"	7221.835	14.061
dg-b4-41 (B25)	BASE 2 FINAL	dg-b4-41	Fixed	0.015	0.033	271°24'16"	7831.187	8.255
dg-b4-43 (B26)	BASE 2 FINAL	dg-b4-43	Fixed	0.016	0.037	274°01'19"	8925.273	-0.266
dg-b4-44 (B27)	BASE 2 FINAL	dg-b4-44	Fixed	0.016	0.038	276°37'42"	9693.238	-0.706
dg-b4-45 (B28)	BASE 2 FINAL	dg-b4-45	Fixed	0.018	0.039	279°13'43"	10298.033	-2.216
dg-b4-122 (B29)	BASE 2 FINAL	dg-b4-122	Fixed	0.017	0.036	279°37'26"	9559.073	-1.640
nh b5 GCP 85 (B57)	BASE 2 FINAL	nh b5 GCP 85	Fixed	0.014	0.027	207°37'54"	5837.228	-0.482
nh b5 GCP 83 (B58)	BASE 2 FINAL	nh b5 GCP 83	Fixed	0.017	0.028	215°41'06"	5744.887	-2.191
nh b5 GCP 76 (B59)	BASE 2 FINAL	nh b5 GCP 76	Fixed	0.017	0.024	211°55'56"	3314.324	-1.716
nh b5 GCP 77 (B60)	BASE 2 FINAL	nh b5 GCP 77	Fixed	0.011	0.016	198°23'20"	3730.360	0.333
nh b5 GCP 80 (B61)	BASE 2 FINAL	nh b5 GCP 80	Fixed	0.019	0.031	203°53'55"	4315.371	-2.038
nh b5 GCP 30 (B62)	BASE 2 FINAL	nh b5 GCP 30	Fixed	0.020	0.035	185°54'05"	3690.282	3.548
nh b5 GCP 31 (B63)	BASE 2 FINAL	nh b5 GCP 31	Fixed	0.017	0.034	177°33'29"	3009.038	3.028
nh b5 GCP 33 (B64)	BASE 2 FINAL	nh b5 GCP 33	Fixed	0.014	0.030	165°08'58"	2434.443	-0.667
nh b5 GCP 41 (B65)	BASE 2 FINAL	nh b5 GCP 41	Fixed	0.014	0.024	78°17'56"	2204.027	2.998

nh b5 GCP 39 (B66)	BASE 2 FINAL	nh b5 GCP 39	Fixed	0.012	0.021	39°26'03"	1358.829	-1.333
nh b5 GCP 65 (B67)	BASE 2 FINAL	nh b5 GCP 65	Fixed	0.014	0.020	276°15'52"	1763.788	-0.207
nh b5 GCP 59 (B68)	BASE 2 FINAL	nh b5 GCP 59	Fixed	0.021	0.030	253°54'01"	3926.240	-1.588
nh b5 GCP 58 (B69)	BASE 2 FINAL	nh b5 GCP 58	Fixed	0.013	0.022	230°57'14"	3059.500	-1.986
nh b5 GCP 56 (B70)	BASE 2 FINAL	nh b5 GCP 56	Fixed	0.014	0.026	261°49'01"	2596.766	-0.176
nh b5 GCP 53 (B71)	BASE 2 FINAL	nh b5 GCP 53	Fixed	0.010	0.021	234°20'42"	2141.638	-2.026
nh b5 GCP 54 (B72)	BASE 2 FINAL	nh b5 GCP 54	Fixed	0.012	0.027	218°59'43"	2443.126	-1.986
nh b5 GCP 55 (B73)	BASE 2 FINAL	nh b5 GCP 55	Fixed	0.013	0.027	209°21'12"	2319.497	-2.378
nh b5 GCP 61 (B74)	BASE 2 FINAL	nh b5 GCP 61	Fixed	0.015	0.034	261°23'05"	4428.391	-1.254
nh b5 GCP 62 (B75)	BASE 2 FINAL	nh b5 GCP 62	Fixed	0.013	0.025	255°15'49"	4750.896	-2.250
nh b5 GCP 67 (B76)	BASE 2 FINAL	nh b5 GCP 67	Fixed	0.012	0.020	258°17'25"	5798.787	9.908
nh b5 GCP 68.2 (B77)	BASE 2 FINAL	nh b5 GCP 68.2	Fixed	0.011	0.020	258°17'25"	5798.804	9.908
nh b5 GCP 68 (B78)	BASE 2 FINAL	nh b5 GCP 68	Fixed	0.014	0.027	251°51'00"	6442.392	3.457
nh b5 GCP 92 (B79)	BASE 2 FINAL	nh b5 GCP 92	Fixed	0.010	0.016	245°38'06"	6708.913	-1.829
nh b5 GCP 95 (B80)	BASE 2 FINAL	nh b5 GCP 95	Fixed	0.012	0.020	225°53'26"	5278.608	-2.859
nh b5 GCP 94 (B81)	BASE 2 FINAL	nh b5 GCP 94	Fixed	0.012	0.020	234°57'37"	5750.725	-1.822
nh b5 GCP 96 (B82)	BASE 2 FINAL	nh b5 GCP 96	Fixed	0.012	0.021	230°52'44"	6188.037	-1.056
nh b5 GCP 97 (B83)	BASE 2 FINAL	nh b5 GCP 97	Fixed	0.012	0.022	223°38'24"	6219.848	-1.024
nh b5 GCP 98 (B84)	BASE 2 FINAL	nh b5 GCP 98	Fixed	0.012	0.022	224°43'20"	7053.752	0.522
nh b5 SH 1 (B85)	BASE 2 FINAL	nh b5 SH 1	Fixed	0.012	0.022	224°50'41"	7046.074	1.047
nh b5 GCP 99 (B86)	BASE 2 FINAL	nh b5 GCP 99	Fixed	0.012	0.022	219°21'59"	7521.921	2.553
nh b5 GCP 107 (B87)	BASE 2 FINAL	nh b5 GCP 107	Fixed	0.015	0.030	214°47'55"	8111.020	-0.567
dg-b4-48 (B30)	BASE 2 FINAL	dg-b4-48	Fixed	0.014	0.020	268°45'05"	8810.236	3.085
dg-b4-49 (B31)	BASE 2 FINAL	dg-b4-49	Fixed	0.013	0.025	268°44'06"	9555.937	0.474
dg-b4-50 (B32)	BASE 2 FINAL	dg-b4-50	Fixed	0.016	0.032	265°39'44"	9535.332	0.511
dg-b4-51 (B33)	BASE 2 FINAL	dg-b4-51	Fixed	0.013	0.028	264°18'49"	10231.609	-0.234
dg-b4-50.1 (B34)	BASE 2 FINAL	dg-b4-50.1	Fixed	0.014	0.032	267°58'05"	10997.131	-2.940
dg-b4-50.2 (B35)	BASE 2 FINAL	dg-b4-50.2	Fixed	0.013	0.028	267°42'27"	10474.621	-2.200

dg-b4-50.3 (B36)	BASE 2 FINAL	dg-b4-50.3	Fixed	0.016	0.033	263°50'33"	10873.444	0.102
dg-b4-50.4 (B37)	BASE 2 FINAL	dg-b4-50.4	Fixed	0.014	0.031	259°43'07"	10433.636	0.273
dg-b4-53 (B38)	BASE 2 FINAL	dg-b4-53	Fixed	0.011	0.018	264°11'28"	11714.660	-2.029
dg-b4-54 (B39)	BASE 2 FINAL	dg-b4-54	Fixed	0.015	0.022	260°22'36"	10963.457	0.893
dg-b4-55 (B40)	BASE 2 FINAL	dg-b4-55	Fixed	0.016	0.026	261°59'37"	11939.698	-1.964
dg-b4-56 (B41)	BASE 2 FINAL	dg-b4-56	Fixed	0.014	0.023	259°55'59"	11934.537	-0.205
dg-b4-57 (B42)	BASE 2 FINAL	dg-b4-57	Fixed	0.014	0.025	257°58'54"	11509.421	1.358
dg-b4-58 (B43)	BASE 2 FINAL	dg-b4-58	Fixed	0.014	0.024	254°59'33"	11573.856	3.630
dg-b4-59 (B44)	BASE 2 FINAL	dg-b4-59	Fixed	0.014	0.025	255°24'47"	12187.117	-2.026
dg-b4-60 (B45)	BASE 2 FINAL	dg-b4-60	Fixed	0.015	0.027	257°26'34"	12145.402	-0.187
dg GCP b7 78 (B140)	BASE 2 FINAL	dg GCP b7 78	Fixed	0.011	0.032	192°59'30"	3124.459	-2.395
dg GCP b7 88 (B141)	BASE 2 FINAL	dg GCP b7 88	Fixed	0.011	0.023	179°20'24"	4355.354	-1.341
dg GCP b7 90 (B142)	BASE 2 FINAL	dg GCP b7 90	Fixed	0.014	0.020	169°03'21"	4208.638	-2.175
dg GCP b7 102.2 (B145)	BASE 2 FINAL	dg GCP b7 102.2	Fixed	0.024	0.075	58°54'16"	3118.807	0.485
dg GCP b7 1033 (B146)	BASE 2 FINAL	dg GCP b7 1033	Fixed	0.017	0.066	33°55'25"	1933.311	0.050
dg GCP b7 104 (B147)	BASE 2 FINAL	dg GCP b7 104	Fixed	0.011	0.025	30°55'39"	3017.448	2.419
dg GCP b7 wl (B148)	BASE 2 FINAL	dg GCP b7 wl	Fixed	0.017	0.037	33°37'20"	3101.485	-2.501
dg GCP b7 107 (B149)	BASE 2 FINAL	dg GCP b7 107	Fixed	0.014	0.025	46°22'16"	4673.623	-1.689
dg GCP b7 106 (B150)	BASE 2 FINAL	dg GCP b7 106	Fixed	0.018	0.034	40°01'59"	4582.048	5.622
dg GCP b7 108 (B151)	BASE 2 FINAL	dg GCP b7 108	Fixed	0.022	0.028	38°36'54"	5444.682	6.432
dg GCP b7 110 (B152)	BASE 2 FINAL	dg GCP b7 110	Fixed	0.015	0.019	44°34'13"	7187.325	-2.620
dg GCP b7 25 (B153)	BASE 2 FINAL	dg GCP b7 25	Fixed	0.018	0.053	32°08'15"	12473.721	-2.574
dg GCP b7 26 (B154)	BASE 2 FINAL	dg GCP b7 26	Fixed	0.023	0.062	33°52'09"	11666.513	-2.677
dg GCP b7 116 (B155)	BASE 2 FINAL	dg GCP b7 116	Fixed	0.031	0.037	49°59'30"	7478.886	-2.760
dg GCP b7 117 (B156)	BASE 2 FINAL	dg GCP b7 117	Fixed	0.038	0.063	62°35'01"	6502.897	-2.808
nh b9 GCP 122 (B195)	BASE 2 FINAL	nh b9 GCP 122	Fixed	0.015	0.030	62°46'04"	4370.820	0.933
nh b9 GCP 124 (B196)	BASE 2 FINAL	nh b9 GCP 124	Fixed	0.015	0.031	67°49'00"	3991.408	3.420
nh b9 GCP 123 (B197)	BASE 2 FINAL	nh b9 GCP 123	Fixed	0.012	0.023	74°34'17"	4714.858	-2.972

nh b10 GCP 4.2 (B198)	BASE 2 FINAL	nh b10 GCP 4.2	Fixed	0.007	0.012	349°33'20"	2324.228	6.049
nh b10 GCP 4.1 (B199)	BASE 2 FINAL	nh b10 GCP 4.1	Fixed	0.010	0.016	337°39'56"	2295.502	4.602
nh b10 GCP 1 (B200)	BASE 2 FINAL	nh b10 GCP 1	Fixed	0.011	0.018	321°49'19"	2459.924	3.743
nh b11 GCP 15 (B201)	BASE 2 FINAL	nh b11 GCP 15	Fixed	0.008	0.013	331°08'26"	3016.273	3.722
nh b10 GCP 5 (B202)	BASE 2 FINAL	nh b10 GCP 5	Fixed	0.011	0.018	344°59'13"	2875.721	3.044
nh b10 GCP 6 (B203)	BASE 2 FINAL	nh b10 GCP 6	Fixed	0.011	0.018	3°48'10"	3242.178	3.480
nh b10 GCP 7 (B204)	BASE 2 FINAL	nh b10 GCP 7	Fixed	0.011	0.020	354°10'27"	3649.720	6.466
nh b10 GCP 8 (B205)	BASE 2 FINAL	nh b10 GCP 8	Fixed	0.013	0.023	358°45'27"	4540.145	3.570
nh b10 GCP 9 (B206)	BASE 2 FINAL	nh b10 GCP 9	Fixed	0.014	0.023	8°03'07"	4168.890	3.063
nh b10 GCP 10 (B207)	BASE 2 FINAL	nh b10 GCP 10	Fixed	0.013	0.023	18°04'27"	3864.165	1.718
nh b10 GCP 11 (B208)	BASE 2 FINAL	nh b10 GCP 11	Fixed	0.015	0.028	351°17'59"	5071.402	0.846
nh b11 GCP 22 (B209)	BASE 2 FINAL	nh b11 GCP 22	Fixed	0.016	0.030	353°50'20"	5602.145	2.352
nh b10 GCP 11.2 (B210)	BASE 2 FINAL	nh b10 GCP 11.2	Fixed	0.016	0.031	358°23'16"	5904.571	-1.038
nh b11 GCP 23 (B211)	BASE 2 FINAL	nh b11 GCP 23	Fixed	0.016	0.031	356°23'29"	6258.569	5.851
nh b11 GCP 24 (B212)	BASE 2 FINAL	nh b11 GCP 24	Fixed	0.014	0.027	358°18'05"	6984.047	8.852
nh b11 GCP 19 (B213)	BASE 2 FINAL	nh b11 GCP 19	Fixed	0.012	0.023	347°11'06"	4478.037	2.318
nh b11 GCP 18 (B214)	BASE 2 FINAL	nh b11 GCP 18	Fixed	0.013	0.025	340°08'05"	3639.745	2.181
dg GCP b7 118 (B157)	BASE 2 FINAL	dg GCP b7 118	Fixed	0.014	0.025	63°27'37"	5494.010	-2.404
dg GCP b7 119 (B158)	BASE 2 FINAL	dg GCP b7 119	Fixed	0.020	0.036	69°04'16"	5379.306	-2.678
dg GCP b7 61 (B159)	BASE 2 FINAL	dg GCP b7 61	Fixed	0.016	0.029	6°20'25"	2665.969	6.311
dg GCP b7 57.2 (B160)	BASE 2 FINAL	dg GCP b7 57.2	Fixed	0.015	0.026	15°57'53"	4562.193	0.332
dg GCP b7 57.3 (B161)	BASE 2 FINAL	dg GCP b7 57.3	Fixed	0.015	0.026	23°21'05"	4606.510	1.683
dg GCP b7 57.4 (B162)	BASE 2 FINAL	dg GCP b7 57.4	Fixed	0.017	0.029	14°45'58"	5280.990	-0.590
dg GCP b7 57.5 (B163)	BASE 2 FINAL	dg GCP b7 57.5	Fixed	0.016	0.025	24°50'23"	5392.334	1.291
nh b5 GCP 32 (B255)	BASE 2 FINAL	nh b5 GCP 32	Fixed	0.011	0.035	186°09'08"	2248.453	-2.133
nh b8 GCP 85 (B256)	BASE 2 FINAL	nh b8 GCP 85	Fixed	0.016	0.030	180°28'29"	9099.205	2.143
nh b8 GCP 86 (B257)	BASE 2 FINAL	nh b8 GCP 86	Fixed	0.012	0.025	175°48'48"	9378.551	-2.649
nh b8 GCP 2 (B258)	BASE 2 FINAL	nh b8 GCP 2	Fixed	0.013	0.023	172°53'52"	10421.135	-1.804

nh b6 GCP 55 B2 (B259)	BASE 2 FINAL	nh b6 GCP 55 B2	Fixed	0.017	0.027	169°15'10"	10821.240	0.829
nh b8 WL 6 (B260)	BASE 2 FINAL	nh b8 WL 6	Fixed	0.017	0.026	165°47'07"	10656.215	-1.100
nh b8 GCP 3 (B261)	BASE 2 FINAL	nh b8 GCP 3	Fixed	0.015	0.023	166°38'25"	10230.969	-1.408
nh b6 GCP 56 B2 (B262)	BASE 2 FINAL	nh b6 GCP 56 B2	Fixed	0.015	0.024	164°23'08"	10867.745	1.850
nh b8 GCP 4 (B263)	BASE 2 FINAL	nh b8 GCP 4	Fixed	0.014	0.024	161°29'38"	10603.179	5.260
nh b8 GCP 83 (B264)	BASE 2 FINAL	nh b8 GCP 83	Fixed	0.026	0.041	161°54'11"	10055.318	6.769
nh b8 GCP 5 (B265)	BASE 2 FINAL	nh b8 GCP 5	Fixed	0.016	0.031	159°14'24"	10036.848	7.873
nh b8 GCP 6 (B266)	BASE 2 FINAL	nh b8 GCP 6	Fixed	0.016	0.037	156°58'46"	9378.253	9.378
nh b8 GCP 7 (B267)	BASE 2 FINAL	nh b8 GCP 7	Fixed	0.013	0.026	160°57'30"	11309.850	8.816
nh b8 GCP 8 (B268)	BASE 2 FINAL	nh b8 GCP 8	Fixed	0.017	0.033	155°55'08"	10204.517	10.953
nh b8 WL 9 (B269)	BASE 2 FINAL	nh b8 WL 9	Fixed	0.015	0.023	156°01'05"	11387.915	8.317
nh b8 GCP 11 (B270)	BASE 2 FINAL	nh b8 GCP 11	Fixed	0.014	0.022	156°14'29"	11315.633	8.874
nh b8 GCP 12 (B271)	BASE 2 FINAL	nh b8 GCP 12	Fixed	0.012	0.023	153°26'46"	11095.541	10.592
nh b8 GCP 13 (B272)	BASE 2 FINAL	nh b8 GCP 13	Fixed	0.012	0.024	151°07'49"	10457.293	10.568
nh b8 GCP 15 (B273)	BASE 2 FINAL	nh b8 GCP 15	Fixed	0.013	0.028	148°52'34"	10113.296	10.821
nh b8 GCP 14 (B274)	BASE 2 FINAL	nh b8 GCP 14	Fixed	0.012	0.028	151°39'58"	9761.952	9.067
nh b8 GCP 25 (B275)	BASE 2 FINAL	nh b8 GCP 25	Fixed	0.014	0.030	149°59'05"	13917.097	12.067
nh b8 GCP 27 (B276)	BASE 2 FINAL	nh b8 GCP 27	Fixed	0.016	0.031	148°53'05"	13391.186	10.754
nh b8 GCP 26 (B277)	BASE 2 FINAL	nh b8 GCP 26	Fixed	0.016	0.031	148°16'55"	13726.880	10.737
nh b8 GCP 29 (B278)	BASE 2 FINAL	nh b8 GCP 29	Fixed	0.014	0.024	146°35'29"	13481.388	9.583
dg b7 wl (B215)	BASE 2 FINAL	dg b7 wl	Fixed	0.012	0.029	147°31'02"	7509.439	7.759
dg b7 71 (B216)	BASE 2 FINAL	dg b7 71	Fixed	0.012	0.029	147°14'11"	7490.355	8.338
dg b7 72 (B217)	BASE 2 FINAL	dg b7 72	Fixed	0.015	0.033	86°20'34"	10780.732	-2.635
dg b7 wl2 (B218)	BASE 2 FINAL	dg b7 wl2	Fixed	0.016	0.034	86°17'15"	10795.522	-3.570
dg b7 62.1 (B219)	BASE 2 FINAL	dg b7 62.1	Fixed	0.014	0.024	81°03'13"	11759.898	4.465
dg b7 62.2 (B220)	BASE 2 FINAL	dg b7 62.2	Fixed	0.017	0.027	80°17'45"	10859.445	6.811
dg b7 58 (B221)	BASE 2 FINAL	dg b7 58	Fixed	0.017	0.026	76°45'57"	10828.734	8.167
dg b7 59 (B222)	BASE 2 FINAL	dg b7 59	Fixed	0.017	0.028	73°29'30"	10843.483	6.154

dg b7 65 (B223)	BASE 2 FINAL	dg b7 65	Fixed	0.016	0.025	69°47'36"	10761.424	0.316
dg b7 66 (B224)	BASE 2 FINAL	dg b7 66	Fixed	0.017	0.026	65°56'59"	11060.680	-0.983
dg b7 67 (B225)	BASE 2 FINAL	dg b7 67	Fixed	0.016	0.027	61°37'42"	11845.285	-1.822
dg b7 86 (B226)	BASE 2 FINAL	dg b7 86	Fixed	0.017	0.028	60°00'40"	12635.438	0.790
dg b7 87 (B227)	BASE 2 FINAL	dg b7 87	Fixed	0.020	0.034	58°26'09"	13144.439	1.597
dg b7 88 (B228)	BASE 2 FINAL	dg b7 88	Fixed	0.019	0.033	62°26'09"	12975.567	-0.658
dg b7 89 (B229)	BASE 2 FINAL	dg b7 89	Fixed	0.012	0.026	56°36'37"	12094.625	-2.357
dg b7 85 (B230)	BASE 2 FINAL	dg b7 85	Fixed	0.015	0.033	57°17'02"	11526.527	-2.699
dg b7 90 (B231)	BASE 2 FINAL	dg b7 90	Fixed	0.016	0.029	59°52'08"	11283.844	-2.496
dg b7 91 (B232)	BASE 2 FINAL	dg b7 91	Fixed	0.015	0.023	60°54'04"	10954.396	-2.461
dg b7 92 (B233)	BASE 2 FINAL	dg b7 92	Fixed	0.015	0.033	74°48'35"	13508.069	-1.381
dg b7 74 (B234)	BASE 2 FINAL	dg b7 74	Fixed	0.015	0.035	73°10'36"	13179.236	8.332
dg b7 81 (B235)	BASE 2 FINAL	dg b7 81	Fixed	0.014	0.034	72°40'59"	14093.502	-1.667
dg b7 82 (B236)	BASE 2 FINAL	dg b7 82	Fixed	0.015	0.031	68°09'26"	14274.864	0.461
dg b7 83 (B237)	BASE 2 FINAL	dg b7 83	Fixed	0.021	0.047	69°56'30"	14176.254	0.703
dg b7 84 (B238)	BASE 2 FINAL	dg b7 84	Fixed	0.015	0.029	69°28'22"	13635.939	6.235
dg b7 93 (B239)	BASE 2 FINAL	dg b7 93	Fixed	0.016	0.027	67°10'09"	13386.343	-1.535
dg b7 94 (B240)	BASE 2 FINAL	dg b7 94	Fixed	0.016	0.028	67°50'03"	13901.278	5.898
dg b7 72.1 (B241)	BASE 2 FINAL	dg b7 72.1	Fixed	0.015	0.025	71°30'12"	12807.723	4.029
dg b7 72.2 (B242)	BASE 2 FINAL	dg b7 72.2	Fixed	0.015	0.026	73°42'27"	12369.770	3.659
dg b7 72.3 (B243)	BASE 2 FINAL	dg b7 72.3	Fixed	0.015	0.024	69°05'48"	12365.649	-0.627
dg b7 72.4 (B244)	BASE 2 FINAL	dg b7 72.4	Fixed	0.015	0.025	65°44'57"	12069.994	-1.070
dg b7 72.5 (B245)	BASE 2 FINAL	dg b7 72.5	Fixed	0.015	0.027	68°31'31"	11513.201	1.224
dg b7 72.6 (B246)	BASE 2 FINAL	dg b7 72.6	Fixed	0.016	0.030	65°49'17"	11575.666	-0.487
dg b7 72.7 (B247)	BASE 2 FINAL	dg b7 72.7	Fixed	0.017	0.034	64°58'13"	10879.119	-2.537
dg b7 72.8 (B248)	BASE 2 FINAL	dg b7 72.8	Fixed	0.016	0.030	88°18'16"	10115.271	2.822
dg b7 35 (B249)	BASE 2 FINAL	dg b7 35	Fixed	0.017	0.032	91°39'13"	9757.056	6.117
dg b7 36 (B250)	BASE 2 FINAL	dg b7 36	Fixed	0.016	0.029	89°35'51"	8883.481	7.938

dg b7 37 (B251)	BASE 2 FINAL	dg b7 37	Fixed	0.015	0.028	94°43'27"	9003.521	8.119
dg b7 33 (B252)	BASE 2 FINAL	dg b7 33	Fixed	0.017	0.030	97°15'44"	9432.512	0.352
dg b7 47 (B253)	BASE 2 FINAL	dg b7 47	Fixed	0.015	0.027	106°51'47"	8947.816	7.979
dg b7 48 (B254)	BASE 2 FINAL	dg b7 48	Fixed	0.016	0.027	112°44'12"	8577.238	4.881
nh b8 GCP 28 (B279)	BASE 2 FINAL	nh b8 GCP 28	Fixed	0.013	0.022	149°04'38"	12743.625	-0.299
nh b8 GCP 30 (B280)	BASE 2 FINAL	nh b8 GCP 30	Fixed	0.014	0.022	145°52'35"	12815.383	9.330
nh b8 GCP 31 (B281)	BASE 2 FINAL	nh b8 GCP 31	Fixed	0.015	0.026	143°12'30"	12790.357	9.649
nh b8 WL 8 (B282)	BASE 2 FINAL	nh b8 WL 8	Fixed	0.016	0.031	143°33'42"	12362.650	6.204
nh b8 GCP 32 (B283)	BASE 2 FINAL	nh b8 GCP 32	Fixed	0.012	0.021	144°25'06"	12022.651	-2.183
nh b8 GCP 34 (B284)	BASE 2 FINAL	nh b8 GCP 34	Fixed	0.013	0.021	140°39'50"	12270.816	8.937
nh b8 GCP 33 (B285)	BASE 2 FINAL	nh b8 GCP 33	Fixed	0.014	0.024	139°27'40"	12778.294	7.076
nh b8 GCP 35 (B286)	BASE 2 FINAL	nh b8 GCP 35	Fixed	0.015	0.029	137°20'21"	12150.679	8.377
nh b8 WL 10 (B287)	BASE 2 FINAL	nh b8 WL 10	Fixed	0.015	0.030	137°46'41"	11964.317	8.275
nh b8 GCP 36 (B288)	BASE 2 FINAL	nh b8 GCP 36	Fixed	0.014	0.027	136°22'17"	11270.290	1.363
nh b8 GCP 37 (B289)	BASE 2 FINAL	nh b8 GCP 37	Fixed	0.015	0.028	134°23'49"	11870.652	6.024
nh b8 GCP 38 (B290)	BASE 2 FINAL	nh b8 GCP 38	Fixed	0.014	0.026	131°34'10"	12026.977	7.497
nh b8 WL 11 (B291)	BASE 2 FINAL	nh b8 WL 11	Fixed	0.015	0.026	131°35'26"	12075.262	3.819
nh b8 GCP 42 (B328)	BASE 2 FINAL	nh b8 GCP 42	Fixed	0.014	0.032	125°10'41"	10698.743	2.208
nh b8 GCP 41 (B329)	BASE 2 FINAL	nh b8 GCP 41	Fixed	0.014	0.029	129°13'36"	10921.767	7.231
nh b8 GCP 43 (B330)	BASE 2 FINAL	nh b8 GCP 43	Fixed	0.014	0.028	132°29'41"	11085.317	3.192
nh b8 GCP 40 (B331)	BASE 2 FINAL	nh b8 GCP 40	Fixed	0.015	0.024	131°13'18"	11470.719	9.211
nh b8 WL 12 (B332)	BASE 2 FINAL	nh b8 WL 12	Fixed	0.017	0.028	111°15'21"	10668.667	-3.520
nh b8 GCP 39 (B333)	BASE 2 FINAL	nh b8 GCP 39	Fixed	0.016	0.026	113°01'56"	10272.999	-2.968
nh b8 GCP 44.1 (B334)	BASE 2 FINAL	nh b8 GCP 44.1	Fixed	0.016	0.027	114°44'16"	9548.225	4.467
nh b8 GCP 45 (B335)	BASE 2 FINAL	nh b8 GCP 45	Fixed	0.013	0.021	111°09'44"	9467.105	0.848
nh b8 GCP 44.2 (B336)	BASE 2 FINAL	nh b8 GCP 44.2	Fixed	0.013	0.024	118°30'28"	9290.853	0.235
nh b8 GCP 44.3 (B337)	BASE 2 FINAL	nh b8 GCP 44.3	Fixed	0.015	0.028	123°06'40"	9440.766	9.410
nh b8 GCP 44.4 (B338)	BASE 2 FINAL	nh b8 GCP 44.4	Fixed	0.015	0.033	123°45'20"	10206.088	-1.449

nh b8 GCP 58.1 (B339)	BASE 2 FINAL	nh b8 GCP 58.1	Fixed	0.013	0.026	124°55'23"	9984.705	5.248
nh b8 GCP 48 (B340)	BASE 2 FINAL	nh b8 GCP 48	Fixed	0.013	0.020	107°24'35"	9597.592	-2.022
nh b8 WL 13 (B341)	BASE 2 FINAL	nh b8 WL 13	Fixed	0.017	0.028	107°23'24"	9604.632	-3.564
nh b8 GCP 49 (B342)	BASE 2 FINAL	nh b8 GCP 49	Fixed	0.013	0.029	102°02'00"	9528.258	-1.337
nh b8 WL 14 (B343)	BASE 2 FINAL	nh b8 WL 14	Fixed	0.013	0.029	112°10'19"	8576.669	1.349
nh b8 WL 15 (B344)	BASE 2 FINAL	nh b8 WL 15	Fixed	0.013	0.026	115°59'22"	9012.666	-0.548
nh b8 GCP 50 (B345)	BASE 2 FINAL	nh b8 GCP 50	Fixed	0.012	0.025	116°18'03"	8883.886	4.867
nh b8 GCP 51 (B346)	BASE 2 FINAL	nh b8 GCP 51	Fixed	0.012	0.024	118°41'54"	8252.274	5.297
dg b7 56 (B292)	BASE 2 FINAL	dg b7 56	Fixed	0.018	0.039	77°55'30"	12938.828	3.724
dg b7 57 (B293)	BASE 2 FINAL	dg b7 57	Fixed	0.017	0.039	75°55'25"	12639.695	6.193
dg b7 60 (B294)	BASE 2 FINAL	dg b7 60	Fixed	0.017	0.038	80°02'21"	12348.452	6.342
dg b7 61 (B295)	BASE 2 FINAL	dg b7 61	Fixed	0.024	0.052	77°35'25"	12129.557	3.098
dg b7 62 (B296)	BASE 2 FINAL	dg b7 62	Fixed	0.024	0.053	74°58'56"	11463.169	0.159
dg b7 63 (B297)	BASE 2 FINAL	dg b7 63	Fixed	0.014	0.022	76°52'24"	10037.629	4.857
dg b7 64 (B298)	BASE 2 FINAL	dg b7 64	Fixed	0.016	0.024	73°02'49"	9633.913	-2.177
dg b7 68 (B299)	BASE 2 FINAL	dg b7 68	Fixed	0.010	0.016	75°41'45"	8650.711	-2.147
dg b7 53 (B300)	BASE 2 FINAL	dg b7 53	Fixed	0.010	0.019	76°14'03"	7946.578	-2.317
dg b7 54 (B301)	BASE 2 FINAL	dg b7 54	Fixed	0.013	0.031	80°33'52"	8975.411	7.079
dg b7 55 (B302)	BASE 2 FINAL	dg b7 55	Fixed	0.015	0.034	78°49'46"	9285.113	5.623
dg b7 69 (B303)	BASE 2 FINAL	dg b7 69	Fixed	0.015	0.032	81°50'59"	9730.290	8.038
dg b7 70 (B304)	BASE 2 FINAL	dg b7 70	Fixed	0.016	0.032	84°36'42"	10337.740	7.036
dg b7 73 (B305)	BASE 2 FINAL	dg b7 73	Fixed	0.016	0.033	84°03'46"	11041.042	-0.841
dg b7 75 (B306)	BASE 2 FINAL	dg b7 75	Fixed	0.015	0.030	84°06'40"	9407.899	8.820
dg b7 76 (B307)	BASE 2 FINAL	dg b7 76	Fixed	0.014	0.028	85°14'20"	8532.937	8.095
dg b7 77 (B308)	BASE 2 FINAL	dg b7 77	Fixed	0.018	0.037	81°24'45"	8019.755	0.463
dg b7 78 (B309)	BASE 2 FINAL	dg b7 78	Fixed	0.017	0.030	86°31'49"	7702.128	2.570
dg b7 79 (B310)	BASE 2 FINAL	dg b7 79	Fixed	0.015	0.026	91°42'46"	7865.234	6.930
dg b7 80 (B311)	BASE 2 FINAL	dg b7 80	Fixed	0.011	0.020	98°37'01"	6774.469	1.502

dg b7 95 (B312)	BASE 2 FINAL	dg b7 95	Fixed	0.010	0.018	95°55'49"	6685.314	-1.855
dg b7 96 (B313)	BASE 2 FINAL	dg b7 96	Fixed	0.011	0.019	94°28'10"	7253.523	0.950
dg b7 97 (B314)	BASE 2 FINAL	dg b7 97	Fixed	0.014	0.024	87°38'40"	6733.683	-2.593
dg b7 98 (B315)	BASE 2 FINAL	dg b7 98	Fixed	0.013	0.023	104°23'59"	7960.138	4.783
dg b7 99 (B316)	BASE 2 FINAL	dg b7 99	Fixed	0.016	0.030	101°22'25"	8203.061	4.756
dg b7 100 (B317)	BASE 2 FINAL	dg b7 100	Fixed	0.016	0.029	98°53'33"	8494.372	9.177
nh b8 GCP 53 (B347)	BASE 2 FINAL	nh b8 GCP 53	Fixed	0.011	0.021	124°48'55"	8152.624	7.030
nh b8 GCP 54 (B348)	BASE 2 FINAL	nh b8 GCP 54	Fixed	0.014	0.024	127°06'03"	8538.453	8.198
nh b8 GCP 55 (B349)	BASE 2 FINAL	nh b8 GCP 55	Fixed	0.013	0.022	133°11'40"	7623.461	10.711
nh b8 GCP 56.1 (B350)	BASE 2 FINAL	nh b8 GCP 56.1	Fixed	0.013	0.022	137°13'50"	8511.839	8.244
nh b8 GCP 57 (B351)	BASE 2 FINAL	nh b8 GCP 57	Fixed	0.012	0.022	127°40'52"	9394.132	6.039
nh b8 GCP 58.2 (B352)	BASE 2 FINAL	nh b8 GCP 58.2	Fixed	0.014	0.028	127°00'01"	9654.118	9.140
nh b8 GCP 56.2 (B353)	BASE 2 FINAL	nh b8 GCP 56.2	Fixed	0.013	0.023	133°02'27"	8920.818	4.864
nh b8 GCP 59 (B354)	BASE 2 FINAL	nh b8 GCP 59	Fixed	0.015	0.025	133°13'57"	9667.726	7.181
nh b8 GCP 61 (B355)	BASE 2 FINAL	nh b8 GCP 61	Fixed	0.016	0.028	131°31'18"	9937.706	4.110
nh b8 GCP 63 (B356)	BASE 2 FINAL	nh b8 GCP 63	Fixed	0.011	0.021	139°53'32"	9939.348	9.051
nh b8 GCP 62 (B357)	BASE 2 FINAL	nh b8 GCP 62	Fixed	0.015	0.030	134°39'02"	10281.176	-2.091
nh b8 GCP 60 (B358)	BASE 2 FINAL	nh b8 GCP 60	Fixed	0.016	0.030	136°52'06"	9610.102	9.626
nh b8 GCP 64 (B359)	BASE 2 FINAL	nh b8 GCP 64	Fixed	0.013	0.025	138°40'20"	7522.156	10.949
dg b7 101 (B318)	BASE 2 FINAL	dg b7 101	Fixed	0.011	0.021	101°12'58"	8897.543	8.904
dg b7 102 (B319)	BASE 2 FINAL	dg b7 102	Fixed	0.013	0.029	108°38'20"	8478.712	2.436
dg b7 103 (B320)	BASE 2 FINAL	dg b7 103	Fixed	0.014	0.027	109°36'24"	7587.886	7.142
dg b7 104 (B321)	BASE 2 FINAL	dg b7 104	Fixed	0.021	0.042	112°01'31"	7872.156	5.166
dg b7 105 (B322)	BASE 2 FINAL	dg b7 105	Fixed	0.027	0.054	112°05'51"	7879.312	5.131
dg b7 106 (B323)	BASE 2 FINAL	dg b7 106	Fixed	0.028	0.056	112°07'36"	7881.976	5.254
dg b7 107 (B324)	BASE 2 FINAL	dg b7 107	Fixed	0.023	0.045	112°09'16"	7886.006	5.174
dg b7 109 (B326)	BASE 2 FINAL	dg b7 109	Fixed	0.019	0.034	112°58'08"	7932.444	5.402
dg b7 w19 (B327)	BASE 2 FINAL	dg b7 w19	Fixed	0.019	0.030	111°54'07"	8505.480	1.425

Acceptance Summary

Processed	Passed	Flag		Fail	
353	353	0		0	

Agri-Sense International

Base Station 3

Project file data		Coordinate System	
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Modified:	2018/02/15 7:30:07 PM (UTC:2)	Zone:	16 North
Time zone:	South Africa Standard Time	Geoid:	EGM96 (Global)
Reference number:		Vertical datum:	
Description:			
Comment 1:			
Comment 2:			
Comment 3:			

Baseline Processing Report

Processing Summary

Observation	From	To	Solution Type	H. Prec. (Meter)	V. Prec. (Meter)	Geodetic Az.	Ellipsoid Dist. (Meter)	ΔHeight (Meter)
nh b1 GCP 121.2 (B43)	base 3 day 6	nh b1 GCP 121.2	Fixed	0.010	0.013	102°30'22"	1063.278	-6.202
nh b1 WL 43.2 (B44)	base 3 day 6	nh b1 WL 43.2	Fixed	0.013	0.024	147°17'51"	7419.129	-30.378
nh b1.2 GCP 30 (B45)	base 3 day 6	nh b1.2 GCP 30	Fixed	0.012	0.024	147°17'21"	7846.625	-31.406
nh b1.2 WL 33 (B46)	base 3 day 6	nh b1.2 WL 33	Fixed	0.012	0.024	149°23'44"	8152.655	-32.864
nh b1.2 GCP 29 (B47)	base 3 day 6	nh b1.2 GCP 29	Fixed	0.013	0.026	151°56'53"	8540.060	-32.271
nh b1.2 WL 32 (B48)	base 3 day 6	nh b1.2 WL 32	Fixed	0.013	0.026	157°09'57"	8337.882	-31.933
nh b1.2 GCP 28 (B49)	base 3 day 6	nh b1.2 GCP 28	Fixed	0.013	0.028	158°28'47"	8158.914	-27.831
nh b1.2 WL 31 (B50)	base 3 day 6	nh b1.2 WL 31	Fixed	0.013	0.027	154°31'24"	7499.218	-24.799
nh b1.2 GCP 27 (B51)	base 3 day 6	nh b1.2 GCP 27	Fixed	0.013	0.028	153°59'16"	7612.906	-27.082
nh b1.2 GCP 26 (B52)	base 3 day 6	nh b1.2 GCP 26	Fixed	0.013	0.029	157°13'51"	7194.821	-20.217
nh b1.2 WL 30 (B53)	base 3 day 6	nh b1.2 WL 30	Fixed	0.013	0.029	157°14'34"	7180.224	-21.628
nh b1.2 GCP 49 (B54)	base 3 day 6	nh b1.2 GCP 49	Fixed	0.010	0.023	164°30'27"	3882.350	3.481
nh b1.2 GCP 46 (B55)	base 3 day 6	nh b1.2 GCP 46	Fixed	0.011	0.025	156°18'05"	3188.409	7.564
nh b1.2 GCP 46.2 (B56)	base 3 day 6	nh b1.2 GCP 46.2	Fixed	0.010	0.021	146°47'50"	2469.031	-5.813
nh b1.2 GCP 46.3 (B57)	base 3 day 6	nh b1.2 GCP 46.3	Fixed	0.010	0.018	141°47'38"	1707.612	-4.997
nh b1.2 GCP 44 (B58)	base 3 day 6	nh b1.2 GCP 44	Fixed	0.010	0.016	165°30'29"	1654.004	-1.633
nh b1.2 GCP 45 (B59)	base 3 day 6	nh b1.2 GCP 45	Fixed	0.013	0.021	168°59'22"	2440.223	3.058

nh b1.2 GCP 47 (B60)	base 3 day 6	nh b1.2 GCP 47	Fixed	0.014	0.023	174°17'32"	3086.950	10.977
nh b1.2 GCP 48 (B61)	base 3 day 6	nh b1.2 GCP 48	Fixed	0.015	0.026	177°18'03"	3648.078	4.302
nh b1.2 GCP 38 (B62)	base 3 day 6	nh b1.2 GCP 38	Fixed	0.010	0.017	179°20'11"	4304.835	11.297
nh b1.2 GCP 37 (B63)	base 3 day 6	nh b1.2 GCP 37	Fixed	0.012	0.020	181°53'38"	5140.960	12.886
nh b1.2 GCP 33 (B64)	base 3 day 6	nh b1.2 GCP 33	Fixed	0.015	0.023	176°58'37"	5744.022	8.597
GCP-94 (B1)	base 3 day 6	GCP-94	Fixed	0.020	0.038	297°05'30"	4638.925	-30.870
GCP-np (B2)	base 3 day 6	GCP-np	Fixed	0.020	0.039	297°05'22"	4644.483	-30.918
GCP-96.2 (B3)	base 3 day 6	GCP-96.2	Fixed	0.021	0.042	298°26'49"	4888.041	-32.726
GCP-96.3 (B4)	base 3 day 6	GCP-96.3	Fixed	0.021	0.042	292°25'41"	5019.895	-33.576
GCP-np1 (B5)	base 3 day 6	GCP-np1	Fixed	0.020	0.041	287°17'19"	4722.965	-31.317
GCP-94.1 (B6)	base 3 day 6	GCP-94.1	Fixed	0.019	0.036	285°00'31"	4402.792	-25.257
GCP-np 3 (B7)	base 3 day 6	GCP-np 3	Fixed	0.020	0.032	277°46'51"	5277.406	-28.314
GCP-92 (B8)	base 3 day 6	GCP-92	Fixed	0.021	0.032	277°41'38"	5280.045	-28.377
GCP-np 5 (B9)	base 3 day 6	GCP-np 5	Fixed	0.017	0.025	275°32'27"	5450.728	-27.249
GCP-93 (B10)	base 3 day 6	GCP-93	Fixed	0.021	0.029	273°28'19"	5627.787	-24.863
GCP-89 (B11)	base 3 day 6	GCP-89	Fixed	0.021	0.028	274°46'46"	4969.039	-26.612
GCP-wl (B12)	base 3 day 6	GCP-wl	Fixed	0.021	0.030	272°56'10"	4804.623	-26.190
GCP-85 (B13)	base 3 day 6	GCP-85	Fixed	0.021	0.030	265°18'27"	3920.537	-12.203
GCP-37 (B14)	base 3 day 6	GCP-37	Fixed	0.017	0.025	256°19'38"	6138.105	-23.138
GCP-wl6 (B15)	base 3 day 6	GCP-wl6	Fixed	0.018	0.026	256°17'26"	6135.960	-24.931
GCP-72 (B16)	base 3 day 6	GCP-72	Fixed	0.018	0.028	248°52'40"	5939.199	-18.666
GCP-69 (B17)	base 3 day 6	GCP-69	Fixed	0.020	0.031	239°48'44"	6242.388	-15.000
GCP-70 (B18)	base 3 day 6	GCP-70	Fixed	0.018	0.029	241°21'32"	5719.167	-9.839
GCP-59 (B19)	base 3 day 6	GCP-59	Fixed	0.018	0.029	230°32'49"	5505.253	-11.652
GCP-60 (B20)	base 3 day 6	GCP-60	Fixed	0.018	0.029	229°45'22"	6723.028	-15.543
GCP-60.1 (B21)	base 3 day 6	GCP-60.1	Fixed	0.018	0.030	225°13'17"	6470.716	-15.087
GCP-np 6 (B22)	base 3 day 6	GCP-np 6	Fixed	0.017	0.030	220°19'33"	6256.295	-11.398
GCP-np 7 (B23)	base 3 day 6	GCP-np 7	Fixed	0.016	0.031	229°22'49"	7691.468	-5.692
GCP-61 (B24)	base 3 day 6	GCP-61	Fixed	0.019	0.037	229°20'36"	7684.719	-6.125
GCP-np8 (B25)	base 3 day 6	GCP-np8	Fixed	0.015	0.028	233°09'00"	7721.155	-5.599
GCP-np9 (B26)	base 3 day 6	GCP-np9	Fixed	0.015	0.029	233°08'07"	7736.258	-5.564
GCP-62.1 (B27)	base 3 day 6	GCP-62.1	Fixed	0.015	0.030	238°03'37"	7316.471	-9.939
GCP-wlq. (B28)	base 3 day 6	GCP-wlq.	Fixed	0.016	0.030	238°44'28"	6912.483	-18.274
GCP-62.1.1 (B29)	base 3 day 6	GCP-62.1.1	Fixed	0.016	0.030	238°49'37"	6878.754	-16.883
nh b1.2 GCP 39.2 (B65)	base 3 day 6	nh b1.2 GCP 39.2	Fixed	0.011	0.019	171°25'20"	4951.250	14.523
nh b1.2 GCP 31 (B66)	base 3 day 6	nh b1.2 GCP 31	Fixed	0.012	0.022	176°13'46"	6745.110	-1.026

nh b1.2 GCP 32 (B67)	base 3 day 6	nh b1.2 GCP 32	Fixed	0.017	0.037	184°11'29"	6432.317	2.908
nh b1.2 GCP 36 (B68)	base 3 day 6	nh b1.2 GCP 36	Fixed	0.014	0.032	193°51'07"	5033.170	-1.160
nh b1.2 GCP 35 (B69)	base 3 day 6	nh b1.2 GCP 35	Fixed	0.017	0.034	193°39'44"	6073.651	-5.039
nh b1.2 GCP 34 (B70)	base 3 day 6	nh b1.2 GCP 34	Fixed	0.016	0.030	187°32'35"	5567.832	10.962
nh b1.2 GCP 39 (B71)	base 3 day 6	nh b1.2 GCP 39	Fixed	0.016	0.026	190°26'08"	4378.110	10.830
nh b1.2 GCP 52 (B72)	base 3 day 6	nh b1.2 GCP 52	Fixed	0.012	0.017	203°11'28"	4350.513	-0.965
nh b1.2 GCP 53 (B73)	base 3 day 6	nh b1.2 GCP 53	Fixed	0.011	0.016	204°36'45"	3610.740	-3.987
nh b1.2 GCP 41 (B74)	base 3 day 6	nh b1.2 GCP 41	Fixed	0.012	0.019	193°51'34"	3528.232	2.211
nh b1.2 GCP 42 (B75)	base 3 day 6	nh b1.2 GCP 42	Fixed	0.011	0.019	191°11'13"	2768.602	8.015
nh b1.2 GCP 43 (B76)	base 3 day 6	nh b1.2 GCP 43	Fixed	0.009	0.016	193°16'29"	1870.894	2.898
nh b1.2 GCP 50 (B77)	base 3 day 6	nh b1.2 GCP 50	Fixed	0.011	0.020	209°21'59"	2652.471	-4.027
nh b1.2 GCP 54 (B78)	base 3 day 6	nh b1.2 GCP 54	Fixed	0.017	0.041	200°52'37"	5754.157	-8.021
nh b1.2 GCP 53.2 (B79)	base 3 day 6	nh b1.2 GCP 53.2	Fixed	0.014	0.032	205°55'52"	4988.755	-6.304
nh b1.2 WL 35 (B80)	base 3 day 6	nh b1.2 WL 35	Fixed	0.014	0.029	211°11'48"	5288.497	-9.459
nh b1.2 GCP 56.1 (B81)	base 3 day 6	nh b1.2 GCP 56.1	Fixed	0.013	0.026	213°18'50"	4924.303	-3.341
nh b1.2 GCP 57 (B82)	base 3 day 6	nh b1.2 GCP 57	Fixed	0.012	0.024	215°29'17"	4122.158	-5.637
nh b1.2 GCP 58 (B83)	base 3 day 6	nh b1.2 GCP 58	Fixed	0.014	0.026	217°45'06"	5534.115	-12.378
nh b1.2 WL 36 (B84)	base 3 day 6	nh b1.2 WL 36	Fixed	0.014	0.026	217°55'44"	5532.515	-12.931
nh b1.2 WL 58.2 (B85)	base 3 day 6	nh b1.2 WL 58.2	Fixed	0.012	0.024	224°44'15"	4742.964	-0.881
nh b1.2 GCP 78 (B86)	base 3 day 6	nh b1.2 GCP 78	Fixed	0.013	0.023	237°27'26"	4876.120	-7.059
nh b1.2 GCP 86 (B87)	base 3 day 6	nh b1.2 GCP 86	Fixed	0.009	0.015	250°34'50"	3582.502	-8.509
nh b1.2 WL 41.2 (B88)	base 3 day 6	nh b1.2 WL 41.2	Fixed	0.010	0.020	247°22'18"	3525.044	-16.679
nh b1.2 GCP 82 (B89)	base 3 day 6	nh b1.2 GCP 82	Fixed	0.009	0.015	240°58'56"	2386.593	-5.981
nh b1.2 GCP 80 (B90)	base 3 day 6	nh b1.2 GCP 80	Fixed	0.011	0.018	234°55'46"	3252.374	-9.363
nh b1.2 GCP 81 (B91)	base 3 day 6	nh b1.2 GCP 81	Fixed	0.009	0.015	226°47'08"	2367.698	-6.254
nh b1.2 WL 36.2 (B92)	base 3 day 6	nh b1.2 WL 36.2	Fixed	0.013	0.023	267°49'15"	6180.982	-28.288
nh b1.2 GCP 74.2 (B93)	base 3 day 6	nh b1.2 GCP 74.2	Fixed	0.012	0.022	264°01'00"	5763.547	-26.220
GCP-62.1.2 (B30)	base 3 day 6	GCP-62.1.2	Fixed	0.012	0.020	215°37'32"	8293.382	-6.081
GCP-67 (B31)	base 3 day 6	GCP-67	Fixed	0.016	0.035	212°45'01"	7667.122	-1.682

GCP-68 (B32)	base 3 day 6	GCP-68	Fixed	0.016	0.033	210°32'01"	7982.199	0.451
GCP-68.1 (B33)	base 3 day 6	GCP-68.1	Fixed	0.014	0.027	215°11'34"	6493.520	-9.586
GCP-68.2 (B34)	base 3 day 6	GCP-68.2	Fixed	0.014	0.028	220°13'02"	7225.399	-8.256
GCP-68.3 (B35)	base 3 day 6	GCP-68.3	Fixed	0.013	0.025	221°06'13"	7674.217	-10.581
GCP-wl9 (B36)	base 3 day 6	GCP-wl9	Fixed	0.014	0.024	220°54'40"	7618.265	-12.790
GCP-103.2 (B38)	base 3 day 6	GCP-103.2	Fixed	0.015	0.028	305°04'29"	4728.004	-33.172
GCP-103.3 (B39)	base 3 day 6	GCP-103.3	Fixed	0.014	0.027	12°00'25"	9084.442	-17.744
GCP-103.4 (B40)	base 3 day 6	GCP-103.4	Fixed	0.014	0.028	15°24'46"	8860.071	-7.971
GCP-103.5 (B41)	base 3 day 6	GCP-103.5	Fixed	0.016	0.031	15°44'20"	9732.517	-9.271
GCP-103.6 (B42)	base 3 day 6	GCP-103.6	Fixed	0.021	0.043	2°11'29"	4008.010	-4.837
nh b2 GCP 78.2 (B94)	base 3 day 6	nh b2 GCP 78.2	Fixed	0.017	0.035	44°12'48"	3158.122	-11.699

Acceptance Summary

Processed	Passed	Flag	Fail
93	93	0	0

BASE STATION 4

Project file data		Coordinate System	
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Size:	111 KB	Datum:	WGS 1984
Modified:	2018/03/02 6:42:25 AM (UTC:-6)	Zone:	16 North
Time zone:	Central Standard Time	Geoid:	EGM96 (Global)
Reference number:		Vertical datum:	
Description:			
Comment 1:			
Comment 2:			
Comment 3:			

Baseline Processing Report

Processing Summary

Observation	From	To	Solution Type	H. Prec. (Meter)	V. Prec. (Meter)	Geodetic Az.	Ellipsoid Dist. (Meter)	ΔHeight (Meter)
dg b10 71 (B1)	Base 4	dg b10 71	Fixed	0.014	0.026	13°55'03"	2681.467	1.966
dg b10 104 (B2)	Base 4	dg b10 104	Fixed	0.011	0.021	309°57'28"	5062.112	9.847
dg b10 106 (B3)	Base 4	dg b10 106	Fixed	0.010	0.020	293°18'55"	5288.130	-1.569
dg b10 105 (B4)	Base 4	dg b10 105	Fixed	0.013	0.024	299°29'24"	4888.359	8.325
dg b10 107 (B5)	Base 4	dg b10 107	Fixed	0.015	0.026	307°05'08"	5570.255	6.486
dg b10 84 (B6)	Base 4	dg b10 84	Fixed	0.015	0.028	290°04'26"	7296.923	-2.583
dg b10 85 (B7)	Base 4	dg b10 85	Fixed	0.015	0.025	290°57'15"	6283.901	-2.292
dg b10 83 (B8)	Base 4	dg b10 83	Fixed	0.016	0.028	296°59'35"	6760.975	-3.035
dg b10 86 (B9)	Base 4	dg b10 86	Fixed	0.015	0.027	302°55'25"	6297.903	-1.608
dg b10 87 (B10)	Base 4	dg b10 87	Fixed	0.014	0.026	300°41'44"	5459.350	-0.397
dg b10 106.1 (B11)	Base 4	dg b10 106.1	Fixed	0.015	0.027	314°02'08"	4456.119	11.256
dg b10 106.2 (B12)	Base 4	dg b10 106.2	Fixed	0.014	0.025	319°47'22"	3962.432	9.494
dg b10 106.3 (B13)	Base 4	dg b10 106.3	Fixed	0.014	0.024	326°31'17"	3513.461	9.385
dg b10 108 (B14)	Base 4	dg b10 108	Fixed	0.013	0.024	315°13'12"	3345.847	3.250
dg b10 109 (B15)	Base 4	dg b10 109	Fixed	0.014	0.025	303°37'13"	3311.831	-1.549
dg b10 110 (B16)	Base 4	dg b10 110	Fixed	0.014	0.026	289°34'41"	3454.667	-0.143
dg b10 111 (B17)	Base 4	dg b10 111	Fixed	0.017	0.031	292°06'36"	4317.389	-2.969
dg b10 112 (B18)	Base 4	dg b10 112	Fixed	0.019	0.035	281°04'20"	2485.113	-1.268
dg b10 113 (B19)	Base 4	dg b10 113	Fixed	0.020	0.037	284°28'05"	4861.397	-1.965
dg b10 114 (B20)	Base 4	dg b10 114	Fixed	0.018	0.035	280°58'32"	4202.056	2.743
dg b10 115 (B21)	Base 4	dg b10 115	Fixed	0.018	0.034	270°08'22"	4102.339	12.087
dg b10 116 (B22)	Base 4	dg b10 116	Fixed	0.018	0.035	271°12'05"	4832.475	3.247
dg b10 117 (B23)	Base 4	dg b10 117	Fixed	0.017	0.032	276°19'35"	6018.400	-1.303

dg b10 118 (B24)	Base 4	dg b10 118	Fixed	0.017	0.030	285°17'58"	6137.539	-2.926
dg b10 119 (B25)	Base 4	dg b10 119	Fixed	0.017	0.028	282°42'10"	5846.982	-2.661
dg b10 120 (B26)	Base 4	dg b10 120	Fixed	0.018	0.028	277°16'40"	5308.509	-0.450
nh b11 GCP 26 (B27)	Base 4	nh b11 GCP 26	Fixed	0.013	0.023	20°36'42"	7972.538	3.639
nh b11 GCP 61 (B28)	Base 4	nh b11 GCP 61	Fixed	0.013	0.023	10°52'18"	7645.029	7.720
nh b11 GCP 54 (B29)	Base 4	nh b11 GCP 54	Fixed	0.013	0.023	1°51'27"	8392.929	3.260
nh b11 GCP 55 (B30)	Base 4	nh b11 GCP 55	Fixed	0.013	0.023	358°10'02"	9287.046	0.241
nh b11 GCP 57 (B31)	Base 4	nh b11 GCP 57	Fixed	0.013	0.024	358°33'12"	9854.404	-1.403
nh b11 GCP 56 (B32)	Base 4	nh b11 GCP 56	Fixed	0.012	0.021	356°05'55"	9836.217	-2.346
nh b11 WL 1 (B33)	Base 4	nh b11 WL 1	Fixed	0.012	0.021	356°03'09"	9840.344	-3.242
nh b11 GCP 59.1 (B34)	Base 4	nh b11 GCP 59.1	Fixed	0.011	0.018	1°03'24"	9216.485	2.620
nh b11 GCP 59.2 (B35)	Base 4	nh b11 GCP 59.2	Fixed	0.017	0.029	5°31'59"	8781.899	2.870
nh b11 GCP 58 (B36)	Base 4	nh b11 GCP 58	Fixed	0.013	0.022	9°15'48"	8316.190	8.500
nh b11 GCP 53 (B37)	Base 4	nh b11 GCP 53	Fixed	0.012	0.022	4°14'53"	7706.698	6.787
nh b11 GCP 52 (B38)	Base 4	nh b11 GCP 52	Fixed	0.012	0.021	359°24'33"	7177.875	7.508
nh b11 GCP 67.1 (B39)	Base 4	nh b11 GCP 67.1	Fixed	0.011	0.020	352°35'19"	6604.232	8.970
nh b11 GCP 68.2 (B40)	Base 4	nh b11 GCP 68.2	Fixed	0.012	0.021	345°03'04"	6171.475	9.688
nh b11 GCP 69 (B41)	Base 4	nh b11 GCP 69	Fixed	0.011	0.020	336°36'23"	5864.851	10.558
nh b11 WL 2 (B42)	Base 4	nh b11 WL 2	Fixed	0.011	0.020	336°37'13"	5863.453	9.838
nh b11 GCP 91 (B43)	Base 4	nh b11 GCP 91	Fixed	0.012	0.021	328°19'46"	5704.137	11.974
nh b11 GCP 89 (B44)	Base 4	nh b11 GCP 89	Fixed	0.012	0.022	316°02'21"	5700.704	8.362
nh b11 GCP 78 (B45)	Base 4	nh b11 GCP 78	Fixed	0.014	0.025	314°06'59"	7144.691	-1.757
nh b11 GCP 79 (B46)	Base 4	nh b11 GCP 79	Fixed	0.015	0.028	313°12'24"	8194.180	-2.881
nh b11 GCP 80 (B47)	Base 4	nh b11 GCP 80	Fixed	0.014	0.026	305°53'17"	7101.686	-1.492
nh b11 GCP 81 (B48)	Base 4	nh b11 GCP 81	Fixed	0.016	0.029	305°32'33"	7887.813	-2.561
nh b11 GCP 82 (B49)	Base 4	nh b11 GCP 82	Fixed	0.015	0.029	299°19'36"	7543.681	-2.030
nh b11 GCP 88 (B50)	Base 4	nh b11 GCP 88	Fixed	0.013	0.024	311°31'49"	6507.694	-0.966

Acceptance Summary

Processed	Passed	Flag	Fail
50	50	0	0

Base Station 5

Project file data		Coordinate System	
Name:	E:\My Documents\2 Agri-Sense\1 Agrisense Jobs\2 Quoted Jobs\Beliez\Drone\GCP Data\Base 5.vce	Name:	World wide/UTM
Size:	446 KB	Datum:	WGS 1984
Modified:	2018/03/13 9:23:02 PM (UTC:-6)	Zone:	16 North
Time zone:	Central Standard Time	Geoid:	EGM96 (Global)
Reference number:		Vertical datum:	
Description:			
Comment 1:			
Comment 2:			
Comment 3:			

Baseline Processing Report

Processing Summary

Observation	From	To	Solution Type	H. Prec. (Meter)	V. Prec. (Meter)	Geodetic Az.	Ellipsoid Dist. (Meter)	ΔHeight (Meter)
nh b12 GCP 13 (B40)	blz b5 d23	nh b12 GCP 13	Fixed	0.011	0.029	203°05'17"	5113.111	0.074
nh b12 GCP 14 (B41)	blz b5 d23	nh b12 GCP 14	Fixed	0.011	0.026	193°35'22"	4849.715	-5.622
nh b12 GCP 15 (B42)	blz b5 d23	nh b12 GCP 15	Fixed	0.010	0.020	198°16'33"	4126.821	-1.719
nh b12 GCP 16 (B43)	blz b5 d23	nh b12 GCP 16	Fixed	0.010	0.018	189°37'55"	3789.512	-5.492
nh b12 GCP 17 (B44)	blz b5 d23	nh b12 GCP 17	Fixed	0.009	0.018	194°21'07"	3032.160	-6.174
nh b12 GCP 17.1 (B45)	blz b5 d23	nh b12 GCP 17.1	Fixed	0.010	0.020	208°59'25"	3287.056	4.739
nh b12 GCP 84 (B46)	blz b5 d23	nh b12 GCP 84	Fixed	0.013	0.023	217°54'35"	4219.687	-0.670
nh b12 GCP 83.2 (B47)	blz b5 d23	nh b12 GCP 83.2	Fixed	0.012	0.020	208°48'49"	4207.701	4.607
nh b12 GCP 83.1 (B48)	blz b5 d23	nh b12 GCP 83.1	Fixed	0.013	0.020	209°07'10"	4944.817	0.955
nh b12 GCP 89.1 (B49)	blz b5 d23	nh b12 GCP 89.1	Fixed	0.014	0.021	221°05'29"	4971.581	-6.558
nh b12 GCP 89.2 (B50)	blz b5 d23	nh b12 GCP 89.2	Fixed	0.014	0.021	228°04'08"	5245.541	-7.789
nh b12 GCP 89.3 (B51)	blz b5 d23	nh b12 GCP 89.3	Fixed	0.014	0.021	227°24'07"	4666.538	-8.109
nh b12 GCP 19.1 (B52)	blz b5 d23	nh b12 GCP 19.1	Fixed	0.016	0.027	195°04'20"	2119.637	-6.073
dg-b12-75.1 (B1)	blz b5 d23	dg-b12-75.1	Fixed	0.009	0.021	51°50'31"	5352.851	-2.019
dg-b12-75.2 (B2)	blz b5 d23	dg-b12-75.2	Fixed	0.013	0.022	60°09'42"	5034.065	-9.292
dg-b12-75.3 (B3)	blz b5 d23	dg-b12-75.3	Fixed	0.015	0.027	59°43'15"	5678.072	-8.109
dg-b12-78.1 (B4)	blz b5 d23	dg-b12-78.1	Fixed	0.018	0.037	53°46'32"	6050.026	-0.847
dg-b12-78.2 (B5)	blz b5 d23	dg-b12-78.2	Fixed	0.018	0.034	56°18'32"	6730.191	-6.970

dg-b12-78.3 (B6)	blz b5 d23	dg-b12-78.3	Fixed	0.019	0.034	60°03'25"	7254.894	-9.322
dg-b12-78.4 (B7)	blz b5 d23	dg-b12-78.4	Fixed	0.020	0.036	66°35'42"	7485.669	-7.061
dg-b12-78.5 (B8)	blz b5 d23	dg-b12-78.5	Fixed	0.023	0.040	75°29'30"	7386.468	-0.050
dg-b12-78.6 (B9)	blz b5 d23	dg-b12-78.6	Fixed	0.015	0.022	70°34'45"	6790.321	-3.222
dg-b12-78.7 (B10)	blz b5 d23	dg-b12-78.7	Fixed	0.018	0.026	73°07'11"	6342.799	-3.187
dg-b12-78.8 (B11)	blz b5 d23	dg-b12-78.8	Fixed	0.017	0.026	68°30'02"	5564.537	-6.542
dg-b12-78.9 (B12)	blz b5 d23	dg-b12-78.9	Fixed	0.011	0.019	62°40'53"	6469.807	-9.850
dg-b12-17 (B13)	blz b5 d23	dg-b12-17	Fixed	0.016	0.033	74°38'23"	8228.611	-0.011
dg-b12-18 (B14)	blz b5 d23	dg-b12-18	Fixed	0.013	0.027	69°39'35"	8283.806	-1.677
dg-b12-19 (B15)	blz b5 d23	dg-b12-19	Fixed	0.016	0.035	80°21'43"	8299.531	-4.204
dg-b12-20 (B16)	blz b5 d23	dg-b12-20	Fixed	0.016	0.036	82°27'36"	8997.091	-3.197
dg-b12-21 (B17)	blz b5 d23	dg-b12-21	Fixed	0.018	0.037	77°48'20"	9005.349	-1.481
dg-b12-22 (B18)	blz b5 d23	dg-b12-22	Fixed	0.011	0.020	76°15'20"	9692.504	-2.130
dg-b12-23 (B19)	blz b5 d23	dg-b12-23	Fixed	0.018	0.028	72°40'15"	10055.880	-4.514
dg-b12-24 (B20)	blz b5 d23	dg-b12-24	Fixed	0.013	0.017	82°56'34"	9730.315	-8.508
dg-b12-25 (B21)	blz b5 d23	dg-b12-25	Fixed	0.012	0.015	86°41'32"	9742.921	-8.717
dg-b12-26 (B22)	blz b5 d23	dg-b12-26	Fixed	0.027	0.048	83°48'26"	10454.940	-8.044
dg-b12-27 (B23)	blz b5 d23	dg-b12-27	Fixed	0.011	0.025	78°41'09"	10414.213	-3.963
dg-b12-28 (B24)	blz b5 d23	dg-b12-28	Fixed	0.016	0.031	75°04'14"	10805.391	-7.812
dg-b12-29 (B25)	blz b5 d23	dg-b12-29	Fixed	0.011	0.022	79°59'01"	10789.336	-8.320
dg-b12-30 (B26)	blz b5 d23	dg-b12-30	Fixed	0.012	0.020	72°27'07"	11524.883	-7.956
dg-b12-31 (B27)	blz b5 d23	dg-b12-31	Fixed	0.014	0.023	75°14'15"	11212.298	-8.414
nh b12 GCP 19.2 (B53)	blz b5 d23	nh b12 GCP 19.2	Fixed	0.011	0.019	208°46'59"	2247.701	1.185
nh b12 GCP 62 (B54)	blz b5 d23	nh b12 GCP 62	Fixed	0.013	0.026	225°01'38"	2809.315	1.386
nh b12 GCP 85 (B55)	blz b5 d23	nh b12 GCP 85	Fixed	0.012	0.025	241°36'58"	2625.217	-7.846
nh b12 GCP 49.1 (B56)	blz b5 d23	nh b12 GCP 49.1	Fixed	0.014	0.031	253°27'33"	3566.084	-7.333
nh b12 GCP 49.2 (B57)	blz b5 d23	nh b12 GCP 49.2	Fixed	0.012	0.027	257°25'10"	3048.904	-6.932
nh b12 GCP 49.3 (B58)	blz b5 d23	nh b12 GCP 49.3	Fixed	0.013	0.026	269°05'25"	2551.613	-8.271
nh b12 GCP 48 (B59)	blz b5 d23	nh b12 GCP 48	Fixed	0.014	0.024	272°31'38"	3399.165	-5.765
nh b12 GCP 22 (B60)	blz b5 d23	nh b12 GCP 22	Fixed	0.011	0.015	200°41'47"	1408.311	-3.096
nh b12 GCP 20 (B61)	blz b5 d23	nh b12 GCP 20	Fixed	0.012	0.017	227°03'34"	1862.436	-1.716
nh b12 GCP 21.1 (B62)	blz b5 d23	nh b12 GCP 21.1	Fixed	0.013	0.018	248°16'48"	1889.684	-7.660
nh b12 GCP 21.2 (B63)	blz b5 d23	nh b12 GCP 21.2	Fixed	0.011	0.016	258°34'44"	1700.152	-8.062
nh b12 GCP 23 (B64)	blz b5 d23	nh b12 GCP 23	Fixed	0.008	0.016	199°53'59"	607.352	-1.332

nh b12 GCP 26 (B65)	blz b5 d23	nh b12 GCP 26	Fixed	0.008	0.017	294°19'07"	823.302	-6.727
nh b12 GCP 38 (B66)	blz b5 d23	nh b12 GCP 38	Fixed	0.010	0.022	308°27'26"	1531.231	-8.053
nh b12 GCP 39 (B67)	blz b5 d23	nh b12 GCP 39	Fixed	0.012	0.025	314°14'31"	2374.189	-9.491
nh b12 GCP 36.2 (B68)	blz b5 d23	nh b12 GCP 36.2	Fixed	0.011	0.022	338°37'24"	1914.761	-8.346
nh b12 GCP 35 (B69)	blz b5 d23	nh b12 GCP 35	Fixed	0.011	0.023	348°22'21"	1938.648	-7.879
nh b12 GCP 31 (B70)	blz b5 d23	nh b12 GCP 31	Fixed	0.010	0.018	10°57'08"	2312.462	-7.138
nh b13 GCP 68.1 (B71)	blz b5 d23	nh b13 GCP 68.1	Fixed	0.009	0.016	17°38'40"	2546.450	-6.754
nh b13 GCP 68.2 (B72)	blz b5 d23	nh b13 GCP 68.2	Fixed	0.011	0.022	23°40'41"	2768.236	-7.838
nh b13 GCP 30 (B73)	blz b5 d23	nh b13 GCP 30	Fixed	0.009	0.018	30°38'38"	2069.091	-9.439
nh b13 GCP 69.11 (B74)	blz b5 d23	nh b13 GCP 69.11	Fixed	0.011	0.019	41°04'25"	2743.050	-9.487
nh b13 GCP 69.12 (B75)	blz b5 d23	nh b13 GCP 69.12	Fixed	0.012	0.020	45°38'43"	2992.766	-8.949
nh b13 GCP 74 (B76)	blz b5 d23	nh b13 GCP 74	Fixed	0.017	0.034	36°18'28"	5400.419	-5.572
nh b13 GCP 76 (B77)	blz b5 d23	nh b13 GCP 76	Fixed	0.010	0.017	45°42'37"	5653.251	-0.844
dg-b12-32 (B29)	blz b5 d23	dg-b12-32	Fixed	0.016	0.035	69°30'31"	11739.767	-4.024
dg-b12-33 (B30)	blz b5 d23	dg-b12-33	Fixed	0.015	0.027	65°15'11"	11496.747	-5.058
dg-b12-42 (B31)	blz b5 d23	dg-b12-42	Fixed	0.015	0.026	62°35'07"	8417.410	-8.159
dg-b12-43 (B32)	blz b5 d23	dg-b12-43	Fixed	0.016	0.027	59°31'50"	8119.711	-10.458
dg-b12-44 (B33)	blz b5 d23	dg-b12-44	Fixed	0.012	0.022	57°49'27"	8666.419	-9.709
dg-b12-46 (B34)	blz b5 d23	dg-b12-46	Fixed	0.011	0.023	56°40'24"	9217.149	-10.011
dg-b12-48 (B35)	blz b5 d23	dg-b12-48	Fixed	0.015	0.031	55°59'21"	9852.715	-9.634
dg-b12-49 (B36)	blz b5 d23	dg-b12-49	Fixed	0.020	0.040	52°53'27"	10253.586	-10.197
dg-b12-55 (B37)	blz b5 d23	dg-b12-55	Fixed	0.019	0.038	54°05'32"	10994.797	-8.499
dg-b12-56 (B38)	blz b5 d23	dg-b12-56	Fixed	0.012	0.020	51°24'00"	11976.908	-10.334
dg-b12-57 (B39)	blz b5 d23	dg-b12-57	Fixed	0.026	0.043	54°43'46"	11794.400	-9.151
nh b13 GCP 45 (B78)	blz b5 d23	nh b13 GCP 45	Fixed	0.012	0.021	47°29'19"	6613.210	-0.074
nh b13 GCP 46 (B79)	blz b5 d23	nh b13 GCP 46	Fixed	0.012	0.023	43°43'20"	6925.004	-4.752
nh b13 GCP 47 (B80)	blz b5 d23	nh b13 GCP 47	Fixed	0.014	0.026	40°59'52"	7356.163	-6.209
nh b13 GCP 48.1 (B81)	blz b5 d23	nh b13 GCP 48.1	Fixed	0.014	0.026	38°49'39"	7712.113	-6.441
nh b13 GCP 49.1 (B82)	blz b5 d23	nh b13 GCP 49.1	Fixed	0.016	0.031	35°05'45"	7680.942	-7.420
nh b13 WL 2 (B83)	blz b5 d23	nh b13 WL 2	Fixed	0.015	0.028	28°09'09"	8191.923	-10.707
nh b13 GCP 49.2 (B84)	blz b5 d23	nh b13 GCP 49.2	Fixed	0.020	0.041	28°12'50"	8191.872	-10.513

nh b13 GCP 45.2 (B85)	blz b5 d23	nh b13 GCP 45.2	Fixed	0.013	0.026	36°31'16"	8779.734	-10.251
nh b13 WL 3 (B86)	blz b5 d23	nh b13 WL 3	Fixed	0.012	0.020	37°07'28"	6901.373	-7.986
nh b13 GCP 77 (B87)	blz b5 d23	nh b13 GCP 77	Fixed	0.012	0.018	38°45'09"	6228.851	-7.434
nh b13 WL 4 (B88)	blz b5 d23	nh b13 WL 4	Fixed	0.012	0.018	38°38'44"	6221.676	-7.990
nh b11 GCP 17.2 (B135)	blz b5 d23	nh b11 GCP 17.2	Fixed	0.012	0.026	199°24'28"	17181.505	-5.838
nh b11 GCP 43.2 (B136)	blz b5 d23	nh b11 GCP 43.2	Fixed	0.013	0.023	222°38'08"	15279.291	-9.168
nh b12 GCP 1 (B137)	blz b5 d23	nh b12 GCP 1	Fixed	0.015	0.021	207°59'30"	10278.679	-6.598
nh b11 GCP 30.2 (B138)	blz b5 d23	nh b11 GCP 30.2	Fixed	0.015	0.022	207°26'02"	10770.719	-4.471
nh b11 GCP 30.1 (B139)	blz b5 d23	nh b11 GCP 30.1	Fixed	0.014	0.022	212°11'04"	11019.128	-7.099
nh b11 GCP 30.3 (B140)	blz b5 d23	nh b11 GCP 30.3	Fixed	0.013	0.022	209°47'48"	10183.942	-7.867
nh b12 GCP 73 (B141)	blz b5 d23	nh b12 GCP 73	Fixed	0.012	0.025	211°32'38"	8993.342	-7.924
nh b12 GCP 2 (B142)	blz b5 d23	nh b12 GCP 2	Fixed	0.014	0.030	207°04'06"	9686.976	-6.427
nh b12 GCP 7 (B143)	blz b5 d23	nh b12 GCP 7	Fixed	0.014	0.028	201°57'31"	8981.306	-3.464
nh b12 GCP 6 (B144)	blz b5 d23	nh b12 GCP 6	Fixed	0.013	0.027	205°30'34"	8828.053	-5.171
nh b12 GCP 80.2 (B145)	blz b5 d23	nh b12 GCP 80.2	Fixed	0.011	0.020	209°33'04"	6503.097	-6.184
nh b12 GCP 82 (B146)	blz b5 d23	nh b12 GCP 82	Fixed	0.010	0.016	214°42'51"	5431.688	-5.885
nh b12 GCP 80.1 (B147)	blz b5 d23	nh b12 GCP 80.1	Fixed	0.011	0.019	215°38'36"	6512.447	-6.563
nh b12 GCP 81 (B148)	blz b5 d23	nh b12 GCP 81	Fixed	0.011	0.018	219°15'05"	5898.301	-6.924
nh b12 GCP 59.2 (B149)	blz b5 d23	nh b12 GCP 59.2	Fixed	0.012	0.021	223°27'46"	6724.236	-7.033
nh b12 GCP 60.1 (B150)	blz b5 d23	nh b12 GCP 60.1	Fixed	0.012	0.023	231°39'51"	6747.378	-7.716
nh b12 GCP 60.2 (B151)	blz b5 d23	nh b12 GCP 60.2	Fixed	0.012	0.020	235°27'23"	6605.137	-9.537
nh b12 GCP 61 (B152)	blz b5 d23	nh b12 GCP 61	Fixed	0.013	0.024	236°40'38"	7328.003	-9.901
dg-b12-24.1 (B89)	blz b5 d23	dg-b12-24.1	Fixed	0.007	0.015	255°17'36"	971.221	-5.726
dg-b12-24.2 (B90)	blz b5 d23	dg-b12-24.2	Fixed	0.014	0.026	287°30'33"	1673.498	-8.414
dg-b12-45 (B91)	blz b5 d23	dg-b12-45	Fixed	0.017	0.029	288°27'18"	2350.142	-8.525
dg-b12-47 (B92)	blz b5 d23	dg-b12-47	Fixed	0.021	0.034	281°24'39"	3801.893	-8.524
dg-b12-50 (B93)	blz b5 d23	dg-b12-50	Fixed	0.023	0.035	272°07'29"	4308.017	-10.043
dg-b12-51 (B94)	blz b5 d23	dg-b12-51	Fixed	0.023	0.035	266°39'11"	4307.168	-8.749
dg-b12-52 (B95)	blz b5 d23	dg-b12-52	Fixed	0.023	0.034	258°58'51"	4434.546	-8.594
dg-b12-53 (B96)	blz b5 d23	dg-b12-53	Fixed	0.021	0.034	264°11'30"	3957.253	-7.239
dg-b12-wl (B97)	blz b5 d23	dg-b12-wl	Fixed	0.018	0.031	283°14'57"	3997.507	-10.698

dg-b12-54 (B98)	blz b5 d23	dg-b12-54	Fixed	0.017	0.035	288°41'03"	3121.792	-6.269
dg-b12-44.2 (B99)	blz b5 d23	dg-b12-44.2	Fixed	0.019	0.041	298°28'20"	3510.064	-9.282
dg-b12-44.3 (B100)	blz b5 d23	dg-b12-44.3	Fixed	0.018	0.039	301°07'39"	2866.213	-6.892
dg-b12-44.4 (B101)	blz b5 d23	dg-b12-44.4	Fixed	0.021	0.040	305°41'08"	3514.526	-8.851
dg-b12-44.5 (B102)	blz b5 d23	dg-b12-44.5	Fixed	0.019	0.038	312°31'12"	3234.584	-7.404
dg-b12-44.6 (B103)	blz b5 d23	dg-b12-44.6	Fixed	0.022	0.042	312°33'33"	3880.578	-9.638
dg-b12-44.7 (B104)	blz b5 d23	dg-b12-44.7	Fixed	0.021	0.038	324°50'35"	3995.904	-9.944
dg-b12-44.8 (B105)	blz b5 d23	dg-b12-44.8	Fixed	0.023	0.044	328°47'56"	3264.013	-9.080
dg-b12-44.9 (B106)	blz b5 d23	dg-b12-44.9	Fixed	0.014	0.024	330°04'28"	2607.407	-9.545
dg-b12-34 (B107)	blz b5 d23	dg-b12-34	Fixed	0.014	0.023	346°54'28"	2692.934	-7.618
dg-b12-35 (B108)	blz b5 d23	dg-b12-35	Fixed	0.016	0.029	344°09'26"	3527.457	-9.348
dg-b12-36 (B109)	blz b5 d23	dg-b12-36	Fixed	0.017	0.028	340°26'04"	3870.619	-9.383
dg-b12-37 (B110)	blz b5 d23	dg-b12-37	Fixed	0.018	0.033	332°13'55"	4610.000	-9.641
dg-b12-38 (B111)	blz b5 d23	dg-b12-38	Fixed	0.019	0.033	339°06'18"	4947.519	-9.893
dg-b12-39 (B112)	blz b5 d23	dg-b12-39	Fixed	0.018	0.033	349°18'36"	3863.645	-9.876
dg-b12-40 (B113)	blz b5 d23	dg-b12-40	Fixed	0.015	0.025	355°50'32"	2796.254	-8.356
dg-b12-41 (B114)	blz b5 d23	dg-b12-41	Fixed	0.016	0.028	5°23'50"	3375.147	-8.099
dg-b12-58 (B115)	blz b5 d23	dg-b12-58	Fixed	0.010	0.019	1°19'58"	4092.876	-8.764
dg-b12-59 (B116)	blz b5 d23	dg-b12-59	Fixed	0.013	0.023	7°45'04"	4219.909	-8.622
dg-b12-60 (B117)	blz b5 d23	dg-b12-60	Fixed	0.017	0.036	16°34'04"	3617.847	-9.115
dg-b12-61 (B118)	blz b5 d23	dg-b12-61	Fixed	0.020	0.040	14°42'32"	4427.588	-8.457
dg-b12-62 (B119)	blz b5 d23	dg-b12-62	Fixed	0.014	0.028	15°27'54"	5066.227	-9.114
dg-b12-73 (B120)	blz b5 d23	dg-b12-73	Fixed	0.021	0.041	25°06'17"	4381.403	-7.528
dg-b12-74 (B121)	blz b5 d23	dg-b12-74	Fixed	0.020	0.039	33°00'50"	3841.676	-9.086
dg-b12-75 (B122)	blz b5 d23	dg-b12-75	Fixed	0.024	0.046	33°56'53"	4654.068	-3.059
dg-b12-76 (B123)	blz b5 d23	dg-b12-76	Fixed	0.024	0.044	41°09'05"	4637.874	-2.935
dg-b12-77 (B124)	blz b5 d23	dg-b12-77	Fixed	0.024	0.043	48°14'48"	4705.255	-3.757
dg-b12-w12 (B125)	blz b5 d23	dg-b12-w12	Fixed	0.022	0.039	48°49'33"	3887.279	-10.328
dg-b12-72 (B126)	blz b5 d23	dg-b12-72	Fixed	0.022	0.037	48°51'39"	3885.558	-9.412
dg-b12-78 (B127)	blz b5 d23	dg-b12-78	Fixed	0.018	0.030	49°36'42"	3105.292	-8.616
dg-b12-79 (B128)	blz b5 d23	dg-b12-79	Fixed	0.017	0.028	51°24'20"	2081.294	-8.065
dg-b12-80 (B129)	blz b5 d23	dg-b12-80	Fixed	0.014	0.023	50°16'59"	1101.728	-7.102
dg-b12-81 (B130)	blz b5 d23	dg-b12-81	Fixed	0.015	0.023	30°13'05"	665.714	-1.141
dg-b12-82 (B131)	blz b5 d23	dg-b12-82	Fixed	0.019	0.028	28°47'16"	1363.770	-6.270
dg-b12-83 (B132)	blz b5 d23	dg-b12-83	Fixed	0.018	0.026	344°20'44"	1168.910	-7.218
dg-b12-84 (B133)	blz b5 d23	dg-b12-84	Fixed	0.017	0.025	77°39'38"	462.287	-5.167
dg-b12-85 (B134)	blz b5 d23	dg-b12-85	Fixed	0.014	0.021	78°47'20"	11.287	0.201
nh b12 GCP 59.1 (B153)	blz b5 d23	nh b12 GCP 59.1	Fixed	0.011	0.020	226°01'40"	6030.591	-7.341

nh b12 GCP 59.3 (B154)	blz b5 d23	nh b12 GCP 59.3	Fixed	0.011	0.021	232°40'25"	5756.555	-8.227
nh b12 GCP 57.1 (B155)	blz b5 d23	nh b12 GCP 57.1	Fixed	0.010	0.019	240°03'58"	5991.073	-8.729
nh b12 GCP 57.2 (B156)	blz b5 d23	nh b12 GCP 57.2	Fixed	0.012	0.023	243°53'28"	6291.599	-9.297
nh b12 GCP 57.3 (B157)	blz b5 d23	nh b12 GCP 57.3	Fixed	0.013	0.026	241°26'26"	6636.084	-9.714
nh b12 GCP 55 (B158)	blz b5 d23	nh b12 GCP 55	Fixed	0.012	0.023	248°35'14"	5741.907	-7.593
nh b12 GCP 56 (B159)	blz b5 d23	nh b12 GCP 56	Fixed	0.013	0.024	254°01'50"	5025.243	-8.659
nh b12 GCP 54.1 (B160)	blz b5 d23	nh b12 GCP 54.1	Fixed	0.014	0.026	243°55'52"	5328.539	-6.231
nh b12 WL 1 (B161)	blz b5 d23	nh b12 WL 1	Fixed	0.017	0.028	245°19'13"	4762.210	-9.784
nh b12 GCP 54.2 (B162)	blz b5 d23	nh b12 GCP 54.2	Fixed	0.011	0.018	247°38'12"	4562.124	-7.864
nh b12 GCP 53 (B163)	blz b5 d23	nh b12 GCP 53	Fixed	0.011	0.017	246°28'02"	3836.201	-7.593
nh b12 GCP 86 (B164)	blz b5 d23	nh b12 GCP 86	Fixed	0.011	0.016	232°12'23"	3530.981	-4.439
nh b12 GCP 87 (B165)	blz b5 d23	nh b12 GCP 87	Fixed	0.012	0.017	233°49'03"	4261.384	-8.023
nh b12 GCP 88 (B166)	blz b5 d23	nh b12 GCP 88	Fixed	0.013	0.019	237°20'17"	4783.258	-9.240
nh b12 GCP 17.2 (B167)	blz b5 d23	nh b12 GCP 17.2	Fixed	0.009	0.014	221°32'48"	3351.678	0.525
nh b13 GCP 35 (B195)	blz b5 d23	nh b13 GCP 35	Fixed	0.014	0.027	46°13'51"	10411.227	-9.522
nh b13 GCP 40 (B196)	blz b5 d23	nh b13 GCP 40	Fixed	0.013	0.025	41°05'34"	9994.015	-2.579
nh b13 GCP 41.1 (B197)	blz b5 d23	nh b13 GCP 41.1	Fixed	0.014	0.024	37°57'30"	9720.062	-9.007
nh b13 GCP 41.2 (B198)	blz b5 d23	nh b13 GCP 41.2	Fixed	0.018	0.031	38°16'44"	10474.206	-7.767
nh b13 GCP 42 (B199)	blz b5 d23	nh b13 GCP 42	Fixed	0.015	0.026	33°34'35"	10115.845	-9.117
nh b13 GCP 43 (B200)	blz b5 d23	nh b13 GCP 43	Fixed	0.015	0.022	32°42'21"	10641.868	-9.281
nh b13 GCP 44 (B201)	blz b5 d23	nh b13 GCP 44	Fixed	0.013	0.019	30°26'54"	10120.483	-9.992
nh b13 GCP 37.1 (B202)	blz b5 d23	nh b13 GCP 37.1	Fixed	0.017	0.034	42°11'33"	11469.281	-0.470
nh b13 GCP 37.2 (B203)	blz b5 d23	nh b13 GCP 37.2	Fixed	0.013	0.026	42°47'54"	10719.821	-1.244
nh b13 GCP 37.3 (B204)	blz b5 d23	nh b13 GCP 37.3	Fixed	0.013	0.029	39°37'21"	12056.708	-7.667
nh b13 GCP 38.1 (B205)	blz b5 d23	nh b13 GCP 38.1	Fixed	0.013	0.030	40°18'26"	11805.135	-8.023
nh b13 GCP 39 (B206)	blz b5 d23	nh b13 GCP 39	Fixed	0.014	0.027	38°24'25"	11542.250	-9.804
nh b13 GCP 38.2 (B207)	blz b5 d23	nh b13 GCP 38.2	Fixed	0.015	0.027	36°22'22"	11866.466	-9.775
nh b13 GCP 38.3 (B208)	blz b5 d23	nh b13 GCP 38.3	Fixed	0.016	0.025	37°48'12"	12114.571	-8.923
nh b13 GCP 36 (B209)	blz b5 d23	nh b13 GCP 36	Fixed	0.016	0.022	45°31'07"	11070.383	-9.642

nh b13 GCP 34.2 (B210)	blz b5 d23	nh b13 GCP 34.2	Fixed	0.020	0.029	46°36'36"	9341.224	-9.286
nh b13 GCP 44.2 (B211)	blz b5 d23	nh b13 GCP 44.2	Fixed	0.012	0.022	40°28'47"	9000.584	-10.107
nh b13 GCP 48.2 (B212)	blz b5 d23	nh b13 GCP 48.2	Fixed	0.012	0.026	43°11'59"	8405.239	-5.566
nh b13 GCP 34.1 (B213)	blz b5 d23	nh b13 GCP 34.1	Fixed	0.013	0.031	47°02'51"	8563.209	-5.696
nh b13 WL 5 (B214)	blz b5 d23	nh b13 WL 5	Fixed	0.013	0.030	51°22'44"	8794.927	-10.515
nh b13 GCP 33 (B215)	blz b5 d23	nh b13 GCP 33	Fixed	0.013	0.031	51°11'39"	8796.513	-10.336
dg-b13-15 (B168)	blz b5 d23	dg-b13-15	Fixed	0.016	0.030	60°29'54"	11916.655	-9.196
dg-b13-16 (B169)	blz b5 d23	dg-b13-16	Fixed	0.017	0.032	60°14'28"	11409.129	-9.810
dg-b13-17 (B170)	blz b5 d23	dg-b13-17	Fixed	0.016	0.028	61°58'58"	10963.990	-8.497
dg-b13-18 (B171)	blz b5 d23	dg-b13-18	Fixed	0.016	0.029	64°43'49"	10787.285	-5.497
dg-b13-19 (B172)	blz b5 d23	dg-b13-19	Fixed	0.018	0.033	63°56'56"	10219.951	-7.664
dg-b13-20 (B173)	blz b5 d23	dg-b13-20	Fixed	0.017	0.031	66°02'23"	10032.380	-5.802
dg-b13-21 (B174)	blz b5 d23	dg-b13-21	Fixed	0.017	0.029	69°19'28"	10831.327	-4.425
dg-b13-22 (B175)	blz b5 d23	dg-b13-22	Fixed	0.013	0.020	72°17'35"	9164.166	-0.789
dg-b13-23 (B176)	blz b5 d23	dg-b13-23	Fixed	0.021	0.032	66°09'55"	9102.156	-4.789
dg-b13-24 (B177)	blz b5 d23	dg-b13-24	Fixed	0.016	0.030	57°21'24"	10804.181	-8.706
dg-b13-25 (B178)	blz b5 d23	dg-b13-25	Fixed	0.014	0.029	60°23'23"	10155.961	-8.504
dg-b13-26 (B179)	blz b5 d23	dg-b13-26	Fixed	0.013	0.028	60°58'03"	9178.246	-7.516
dg-b13-27 (B180)	blz b5 d23	dg-b13-27	Fixed	0.017	0.033	359°25'03"	5847.251	-10.329
dg-b13-wl (B181)	blz b5 d23	dg-b13-wl	Fixed	0.020	0.042	359°38'46"	5803.208	-10.732
dg-b13-wm (B182)	blz b5 d23	dg-b13-wm	Fixed	0.026	0.043	6°37'23"	6009.723	-10.126
dg-b13-51 (B183)	blz b5 d23	dg-b13-51	Fixed	0.019	0.028	8°31'26"	5701.441	-10.196
dg-b13-52 (B184)	blz b5 d23	dg-b13-52	Fixed	0.025	0.034	16°21'09"	5824.949	-9.704
dg-b13-53 (B185)	blz b5 d23	dg-b13-53	Fixed	0.019	0.028	22°58'31"	6270.381	-8.367
dg-b13-54 (B186)	blz b5 d23	dg-b13-54	Fixed	0.014	0.022	20°41'03"	5622.863	-8.682
dg-b13-55 (B187)	blz b5 d23	dg-b13-55	Fixed	0.014	0.023	24°37'02"	5391.631	-7.788
dg-b13-56 (B188)	blz b5 d23	dg-b13-56	Fixed	0.014	0.026	29°26'33"	6312.805	-5.810
dg-b13-57 (B189)	blz b5 d23	dg-b13-57	Fixed	0.015	0.030	33°29'36"	7019.590	-6.522
dg-b13-58 (B190)	blz b5 d23	dg-b13-58	Fixed	0.017	0.039	25°32'49"	7164.625	-10.197
dg-b13-59 (B191)	blz b5 d23	dg-b13-59	Fixed	0.019	0.045	32°06'20"	7508.786	-8.386
dg-b13-60 (B192)	blz b5 d23	dg-b13-60	Fixed	0.016	0.028	51°26'34"	7842.768	-2.419
dg-b13-61 (B193)	blz b5 d23	dg-b13-61	Fixed	0.014	0.021	46°27'41"	8027.784	-6.872
dg-b13-62 (B194)	blz b5 d23	dg-b13-62	Fixed	0.014	0.021	50°12'48"	6986.922	-0.436
nh b13 GCP 31 (B217)	blz b5 d23	nh b13 GCP 31	Fixed	0.013	0.020	55°20'41"	7628.880	-8.225

Acceptance Summary

Processed	Passed	Flag		Fail	
1747	1747	0		0	

Agri-Sense International

Appendix 4

Pix4D Quality Reports and Summary Table

Quality Report



Generated with Pix4Dmapper Pro version 3.2.10 Preview



Important: Click on the different icons for:



Help to analyze the results in the Quality Report



Additional information about the sections



Click [here](#) for additional tips to analyze the Quality Report

Summary



Project	Block1-1
Processed	2018-04-02 20:22:35
Camera Model Name(s)	UMC-R10C_E16mmF2.8_16.0_5456x3632 (RGB)
Average Ground Sampling Distance (GSD)	10,34 cm / 4.07 in
Area Covered	62,2404 km ² / 6224,04 ha / 24,0436 sq. mi. / 15387,9 acres

Quality Check



Images	median of 86914 keypoints per image	
Dataset	3735 out of 3759 images calibrated (99%), all images enabled	
Camera Optimization	1.29% relative difference between initial and optimized internal camera parameters	
Matching	median of 25770.5 matches per calibrated image	
Georeferencing	yes, 83 GCPs (83 3D), mean RMS error = 0.199 m	



Preview

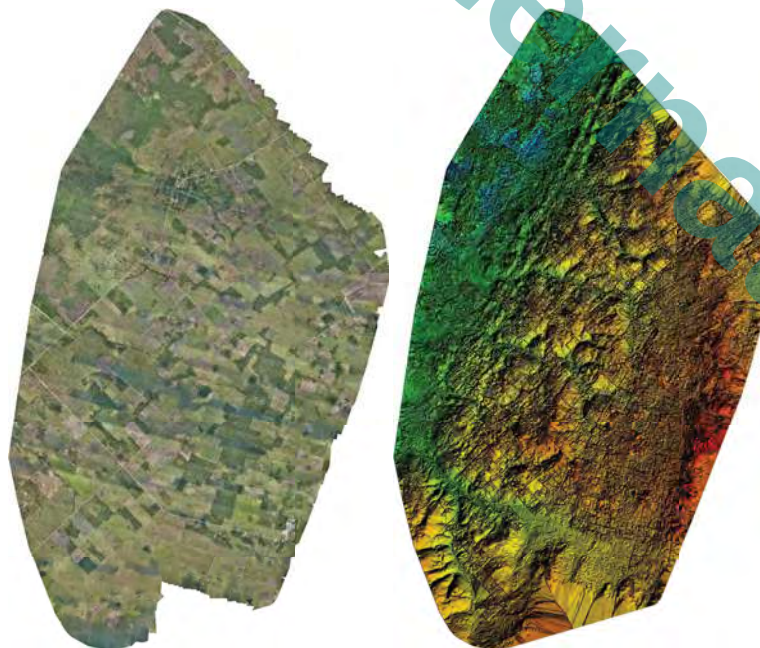


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	3735 out of 3759
Number of Geolocated Images	3759 out of 3759

Initial Image Positions

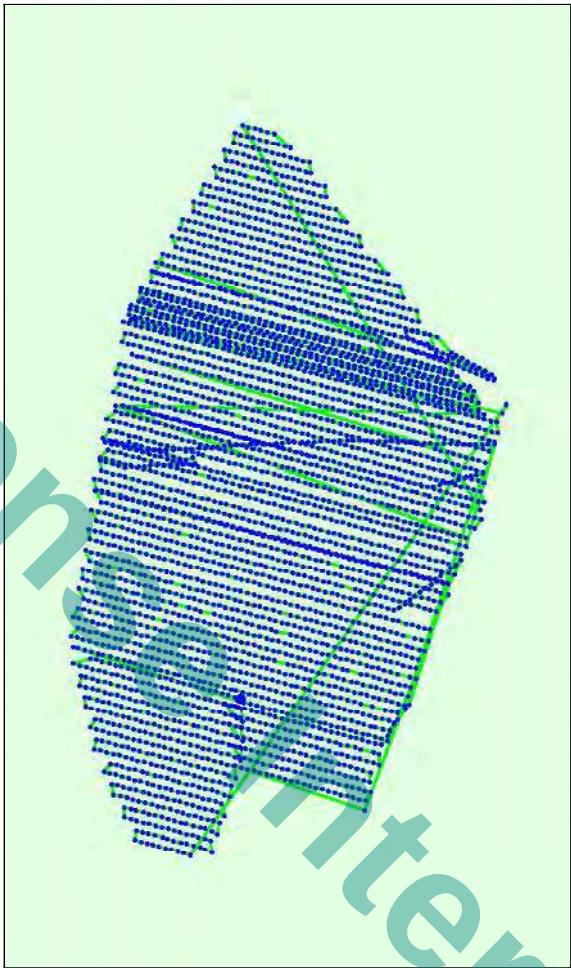


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions





Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane). Red dots indicate disabled or uncalibrated images.

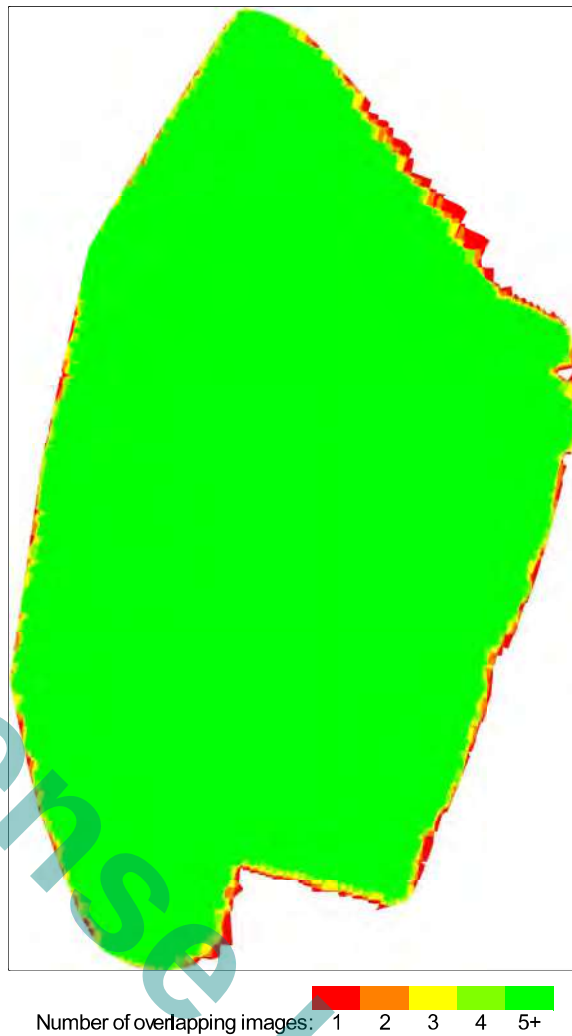


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint matches is also sufficient for these areas (see Figure 5 for keypoint matches).

Bundle Block Adjustment Details

Number of 2D Keypoint Observations for Bundle Block Adjustment	96271763
Number of 3D Points for Bundle Block Adjustment	33979742
Mean Reprojection Error [pixels]	0.233

Internal Camera Parameters

UMC-R10C_E16mmF2.8_16.0_5456x3632 (RGB). Sensor Dimensions: 23.333 [mm] x 15.533 [mm]

EXIF ID: UMC-R10C_E16mmF2.8_16.0_5456x3632

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3741.257 [pixel] 16.000 [mm]	2728.000 [pixel] 11.667 [mm]	1816.000 [pixel] 7.766 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	3692.877 [pixel] 15.793 [mm]	2700.489 [pixel] 11.549 [mm]	1777.392 [pixel] 7.601 [mm]	-0.067	0.113	-0.031	-0.003	-0.002

Quality Report



Generated with Pix4Dmapper Pro version 3.2.10 Preview



Important: Click on the different icons for:



Help to analyze the results in the Quality Report



Additional information about the sections



Click [here](#) for additional tips to analyze the Quality Report

Summary



Project	block1-2
Processed	2018-04-02 10:18:01
Camera Model Name(s)	UMC-R10C_E16mmF2.8_16.0_5456x3632 (RGB)
Average Ground Sampling Distance (GSD)	10.26 cm / 4.04 in
Area Covered	54,5691 km ² / 5456.91 ha / 21,0802 sq. mi. / 13491.3 acres

Quality Check



Images	median of 87621 keypoints per image	
Dataset	3161 out of 3224 images calibrated (98%), all images enabled, 2 blocks	
Camera Optimization	0.4% relative difference between initial and optimized internal camera parameters	
Matching	median of 26581.5 matches per calibrated image	
Georeferencing	yes, 73 GCPs (73 3D), mean RMS error = 0.062 m	

Preview

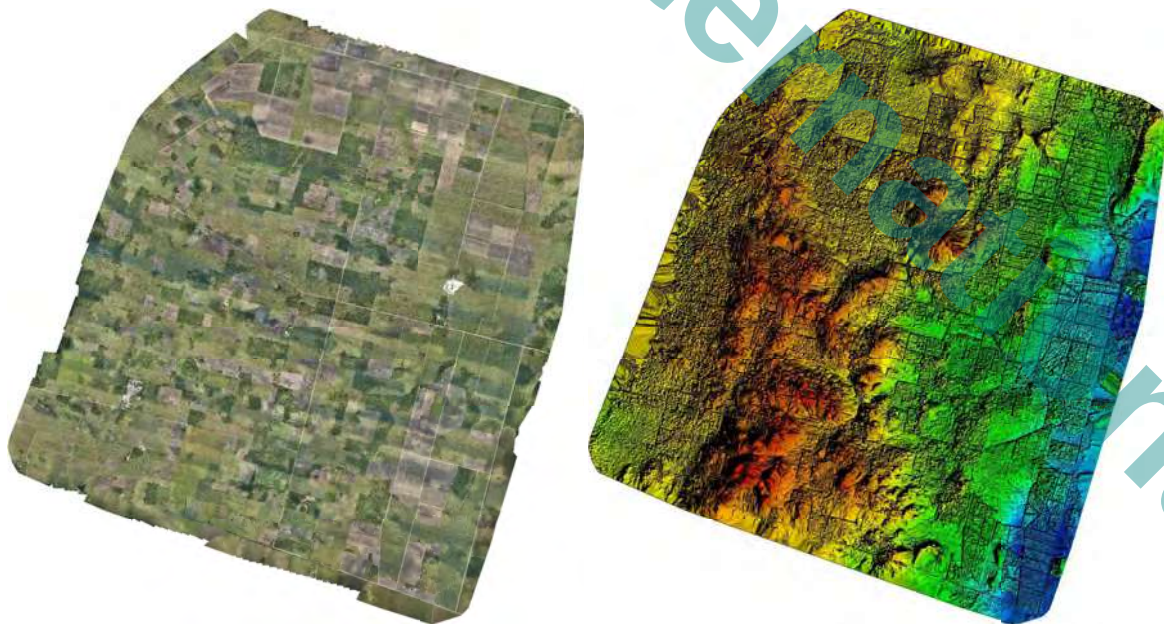


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	3161 out of 3224
Number of Geolocated Images	3224 out of 3224

Initial Image Positions

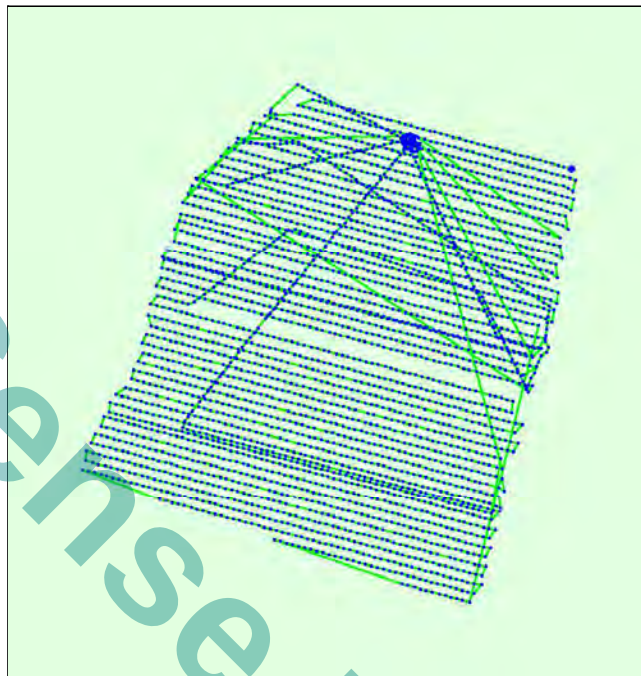


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

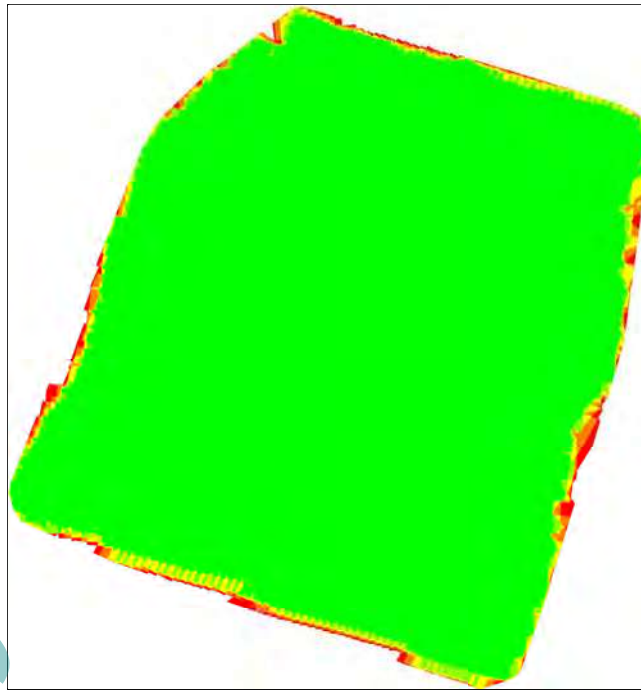
Computed Image/GCPs/Manual Tie Points Positions





Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane). Red dots indicate disabled or uncalibrated images.

Overlap



Number of overlapping images: 1 2 3 4 5+

Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint matches is also sufficient for these areas (see Figure 5 for keypoint matches).

Bundle Block Adjustment Details

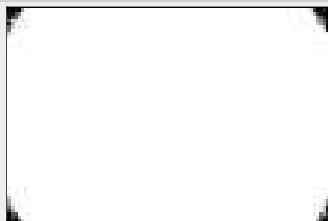
Number of 2D Keypoint Observations for Bundle Block Adjustment	87324982
Number of 3D Points for Bundle Block Adjustment	29805839
Mean Reprojection Error [pixels]	0.240

Internal Camera Parameters

UMC-R10C_E16mmF2.8_16.0_5456x3632 (RGB). Sensor Dimensions: 23.333 [mm] x 15.533 [mm]

EXIF ID: UMC-R10C_E16mmF2.8_16.0_5456x3632

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3741.257 [pixel] 16.000 [mm]	2728.000 [pixel] 11.667 [mm]	1816.000 [pixel] 7.766 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	3725.983 [pixel] 15.935 [mm]	2699.810 [pixel] 11.546 [mm]	1777.182 [pixel] 7.600 [mm]	-0.068	0.115	-0.030	-0.003	-0.002



The number of Automatic Tie Points (ATPs) per pixel, averaged over all images of the camera model, is color coded between black and white. White indicates that, on average, more than 16 ATPs have been extracted at the pixel location. Black indicates that, on average, 0 ATPs have been extracted at the pixel location. Click on the image to see the average direction and magnitude of the re-projection error for each pixel. Note that the vectors are scaled for better visualization.

2D Keypoints Table

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	87621	26581
Mn	31450	3346

Quality Report



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Important: Click on the different icons for:



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Additional information about the sections



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Summary



Project	block2-merge
Processed	2018-03-22 13:36:41
Camera Model Name(s)	UMC-R10C_E16mmF2.8_16.0_5456x3632 (RGB)(1), ILCE-QX1_E16mmF2.8_16.0_5456x3632 (RGB)(2), UMC-R10C_E16mmF2.8_16.0_5456x3632 (RGB)(3), FC6310_8.8_5472x3078 (RGB), ILCE-QX1_E16mmF2.8_16.0_5456x3632 (RGB)(5)
Average Ground Sampling Distance (GSD)	10.02 cm / 3.94 in
Area Covered	100,523 km ² / 10052,3 ha / 38,8322 sq. mi. / 24852,6 acres

Quality Check



Images	median of 85478 keypoints per image	
Dataset	5881 out of 6047 images calibrated (97%), 3 images disabled, 2 blocks	
Camera Optimization	0.85% relative difference between initial and optimized internal camera parameters	
Matching	median of 23221 matches per calibrated image	
Georeferencing	yes, 133 GCPs (133 3D), mean RMS error = 5.095 m	



Preview

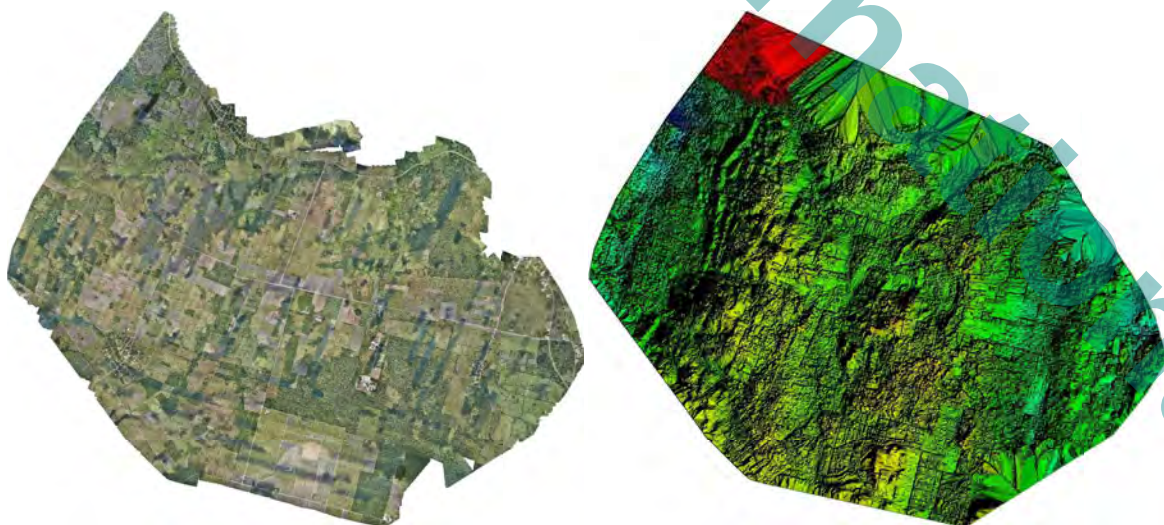


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	5884 out of 6050
Number of Geolocated Images	5918 out of 6050

Initial Image Positions

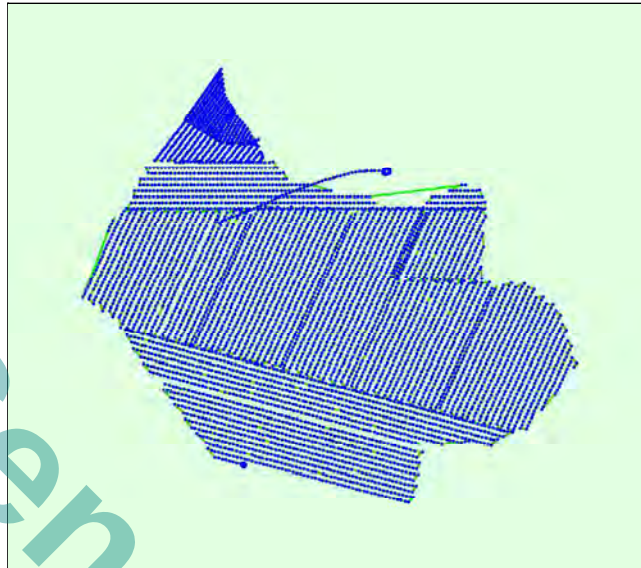


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions



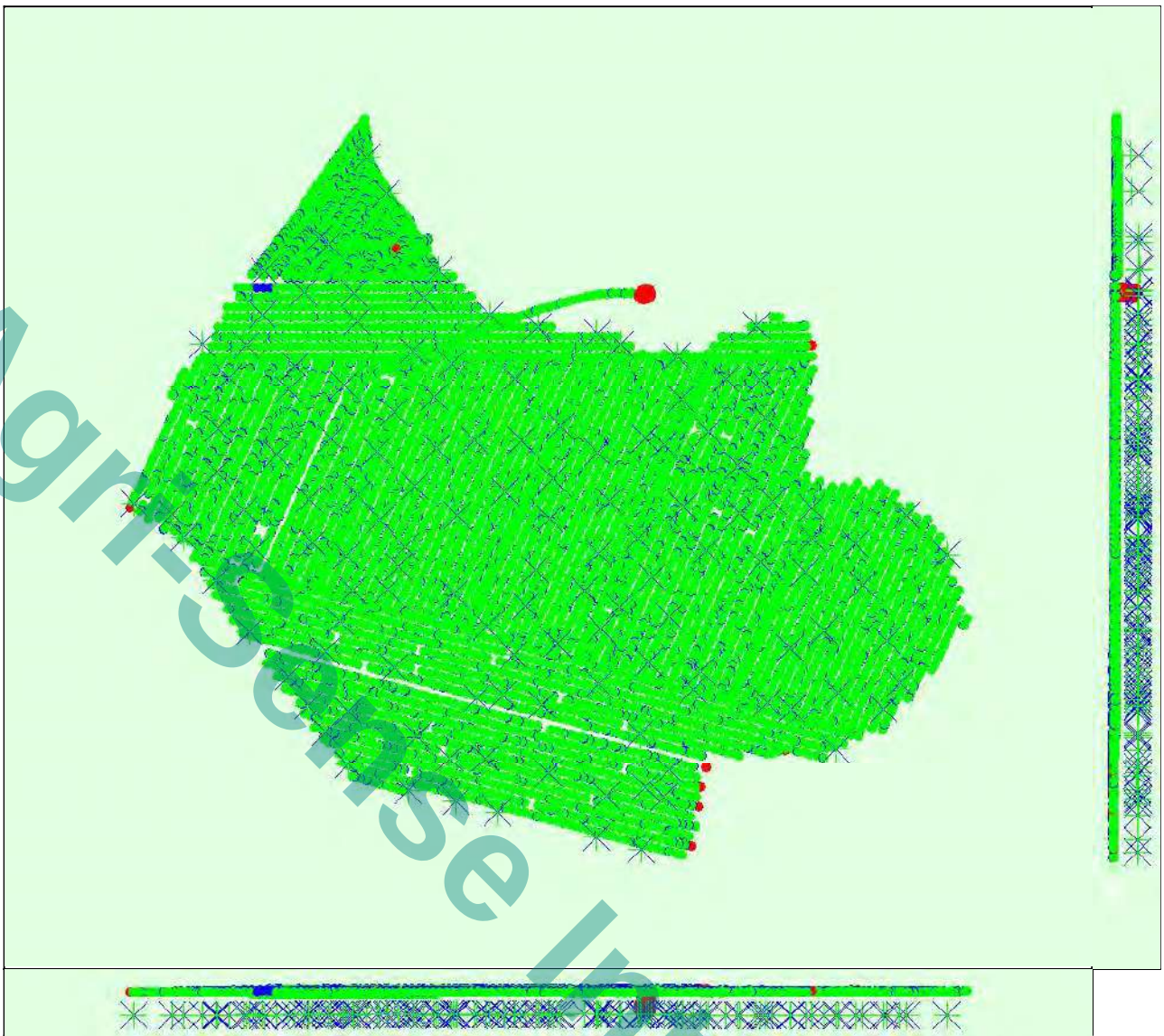
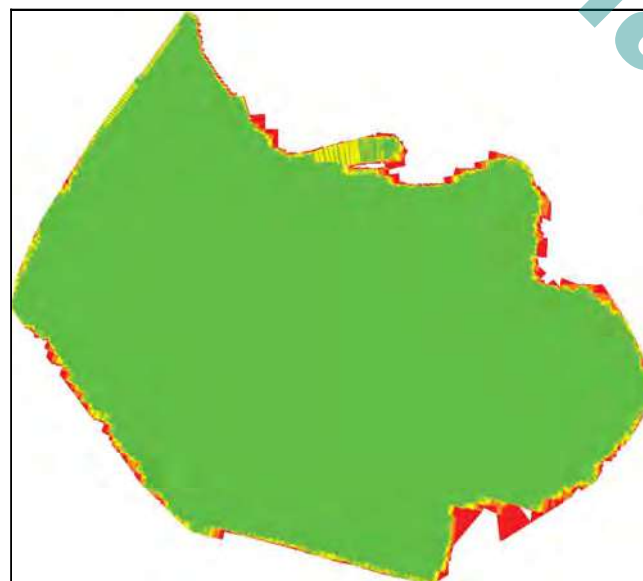


Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane). Red dots indicate disabled or uncalibrated images.

Overlap



Number of overlapping images: 1 2 3 4 5+

Figure 4: Number of overlapping images computed for each pixel of the orthomosaic.

Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint matches is also sufficient for these areas (see Figure 5 for keypoint matches).

Bundle Block Adjustment Details

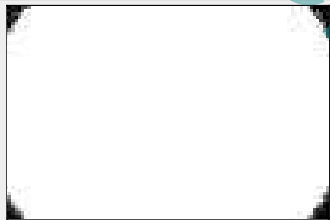
Number of 2D Keypoint Observations for Bundle Block Adjustment	141033844
Number of 3D Points for Bundle Block Adjustment	49158797
Mean Reprojection Error [pixels]	0.233

Internal Camera Parameters

 **UMC-R10C_E16mmF2.8_16.0_5456x3632 (RGB)(1). Sensor Dimensions: 23.333 [mm] x 15.533 [mm]**

EXIF ID: UMC-R10C_E16mmF2.8_16.0_5456x3632

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3741.257 [pixel] 16.000 [mm]	2728.000 [pixel] 11.667 [mm]	1816.000 [pixel] 7.766 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	3739.085 [pixel] 15.991 [mm]	2695.583 [pixel] 11.528 [mm]	1764.832 [pixel] 7.548 [mm]	-0.069	0.121	-0.037	-0.003	-0.002



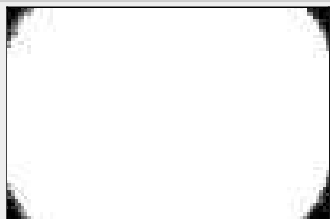
The number of Automatic Tie Points (ATPs) per pixel, averaged over all images of the camera model, is color coded between black and white. White indicates that, on average, more than 16 ATPs have been extracted at the pixel location. Black indicates that, on average, 0 ATPs have been extracted at the pixel location. Click on the image to see the average direction and magnitude of the re-projection error for each pixel. Note that the vectors are scaled for better visualization.

Internal Camera Parameters

 **ILCE-QX1_E16mmF2.8_16.0_5456x3632 (RGB)(2). Sensor Dimensions: 23.333 [mm] x 15.533 [mm]**

EXIF ID: ILCE-QX1_E16mmF2.8_16.0_5456x3632

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3741.257 [pixel] 16.000 [mm]	2728.000 [pixel] 11.667 [mm]	1816.000 [pixel] 7.766 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	3753.020 [pixel] 16.050 [mm]	2680.271 [pixel] 11.463 [mm]	1779.202 [pixel] 7.609 [mm]	-0.071	0.114	-0.027	-0.002	-0.003



The number of Automatic Tie Points (ATPs) per pixel, averaged over all images of the camera model, is color coded between black and white. White indicates that, on average, more than 16 ATPs have been extracted at the pixel location. Black indicates that, on average, 0 ATPs have been extracted at the pixel location. Click on the image to see the average direction and magnitude of the re-projection error for each pixel. Note that the vectors are scaled for better visualization.

Internal Camera Parameters

 **UMC-R10C_E16mmF2.8_16.0_5456x3632 (RGB)(3). Sensor Dimensions: 23.333 [mm] x 15.533 [mm]**

EXIF ID: UMC-R10C_E16mmF2.8_16.0_5456x3632

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3741.257 [pixel] 16.000 [mm]	2728.000 [pixel] 11.667 [mm]	1816.000 [pixel] 7.766 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	3755.515 [pixel] 16.061 [mm]	2694.845 [pixel] 11.525 [mm]	1755.411 [pixel] 7.507 [mm]	-0.066	0.106	-0.016	-0.003	0.000

Quality Report



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Additional information about the sections



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Summary



Project	b2_bad_area_rerun_sdw_3120
Processed	2018-04-18 15:33:41
Camera Model Name(s)	FC6310_8.8_5472x3078 (RGB), ILCE-QX1_E16mmF2.8_16.0_5456x3632 (RGB)
Average Ground Sampling Distance (GSD)	8.96 cm / 3.52 in
Area Covered	16,8916 km ² / 1689,16 ha / 6,5252 sq. mi. / 4176,16 acres

Quality Check



Images	median of 22764 keypoints per image	
Dataset	1177 out of 1180 images calibrated (99%), all images enabled, 2 blocks	
Camera Optimization	6.67% relative difference between initial and optimized internal camera parameters	
Matching	median of 10328.2 matches per calibrated image	
Georeferencing	yes, 26 GCPs (26 3D), mean RMS error = 0.862 m	

Preview



Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	1177 out of 1180
Number of Geolocated Images	1180 out of 1180



Initial Image Positions



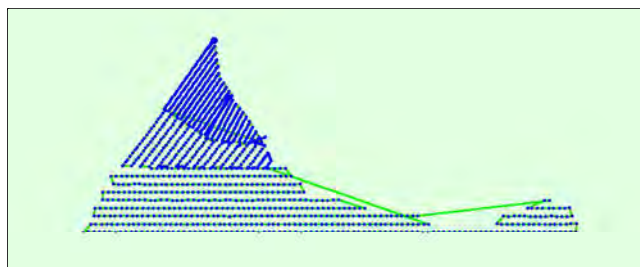


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions

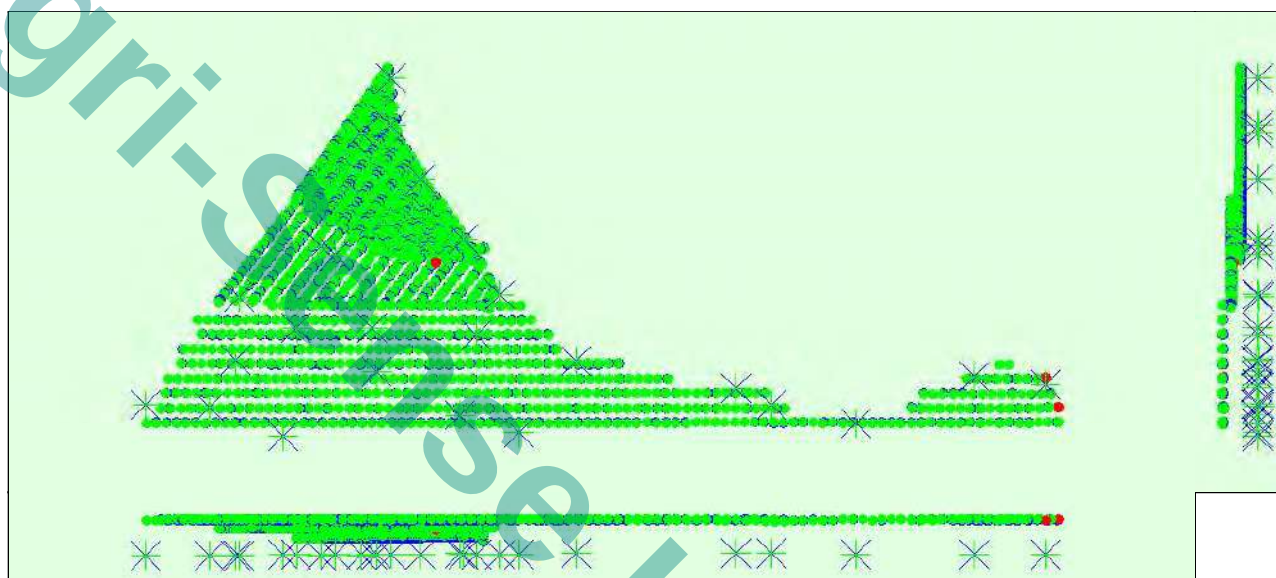


Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane). Red dots indicate disabled or uncalibrated images.

Overlap

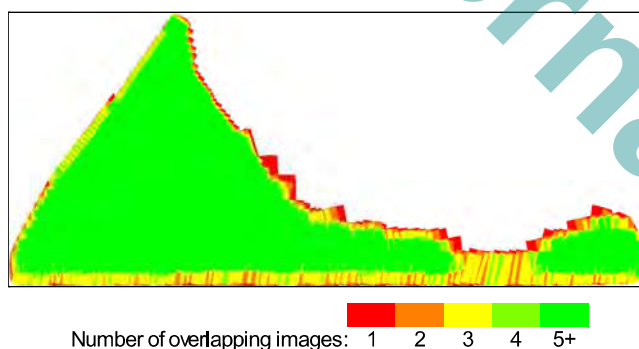


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint matches is also sufficient for these areas (see Figure 5 for keypoint matches).

Bundle Block Adjustment Details

Number of 2D Keypoint Observations for Bundle Block Adjustment	12472951
Number of 3D Points for Bundle Block Adjustment	4286014
Mean Reprojection Error [pixels]	0.155

Internal Camera Parameters

FC6310_8.8_5472x3078 (RGB). Sensor Dimensions: 12.833 [mm] x 7.219 [mm]

EXIF ID: FC6310_8.8_5472x3078

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3752.229 [pixel] 8.800 [mm]	2736.000 [pixel] 6.417 [mm]	1539.000 [pixel] 3.609 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	3327.806 [pixel] 7.805 [mm]	2823.553 [pixel] 6.622 [mm]	1547.308 [pixel] 3.629 [mm]	0.000	-0.001	0.000	0.001	0.001



The number of Automatic Tie Points (ATPs) per pixel, averaged over all images of the camera model, is color coded between black and white. White indicates that, on average, more than 16 ATPs have been extracted at the pixel location. Black indicates that, on average, 0 ATPs have been extracted at the pixel location. Click on the image to see the average direction and magnitude of the re-projection error for each pixel. Note that the vectors are scaled for better visualization.

Internal Camera Parameters

ILCE-QX1_E16mmF2.8_16.0_5456x3632 (RGB). Sensor Dimensions: 23.333 [mm] x 15.533 [mm]

EXIF ID: ILCE-QX1_E16mmF2.8_16.0_5456x3632

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3741.257 [pixel] 16.000 [mm]	2728.000 [pixel] 11.667 [mm]	1816.000 [pixel] 7.766 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	3817.199 [pixel] 16.325 [mm]	2694.739 [pixel] 11.524 [mm]	1783.243 [pixel] 7.626 [mm]	-0.069	0.104	-0.007	-0.002	-0.003



The number of Automatic Tie Points (ATPs) per pixel, averaged over all images of the camera model, is color coded between black and white. White indicates that, on average, more than 16 ATPs have been extracted at the pixel location. Black indicates that, on average, 0 ATPs have been extracted at the pixel location. Click on the image to see the average direction and magnitude of the re-projection error for each pixel. Note that the vectors are scaled for better visualization.

2D Keypoints Table

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	22764	10328
Min	10161	1622
Max	43098	20350
Mean	22725	10597

2D Keypoints Table for Camera FC6310_8.8_5472x3078 (RGB)

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	21469	9128
Min	11401	3608
Max	31940	20350
Mean	20091	9803

2D Keypoints Table for Camera ILCE-QX1_E16mmF2.8_16.0_5456x3632 (RGB)

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	26555	11978
Min	10161	1622
Max	43098	19535

Mean	26404	11707
------	-------	-------

Median / 75% / Maximal Number of Matches Between Camera Models

	FC6310_8.8_5472...(RGB)	ILCE-QX1_E16mmF...(RGB)
FC6310_8.8_5472x3078 (RGB)	182 / 723 / 18983	31 / 126 / 1754
ILCE-QX1_E16mmF2.8_16.0_5456x3632 (RGB)		428 / 1450 / 10108

3D Points from 2D Keypoint Matches

	Number of 3D Points Observed
In 2 Images	2664677
In 3 Images	762535
In 4 Images	338752
In 5 Images	183833
In 6 Images	120577
In 7 Images	76956
In 8 Images	51208
In 9 Images	35236
In 10 Images	22759
In 11 Images	12464
In 12 Images	6990
In 13 Images	3974
In 14 Images	2467
In 15 Images	1628
In 16 Images	884
In 17 Images	460
In 18 Images	291
In 19 Images	165
In 20 Images	69
In 21 Images	42
In 22 Images	25
In 23 Images	8
In 24 Images	7
In 25 Images	1
In 26 Images	5
In 27 Images	1

2D Keypoint Matches

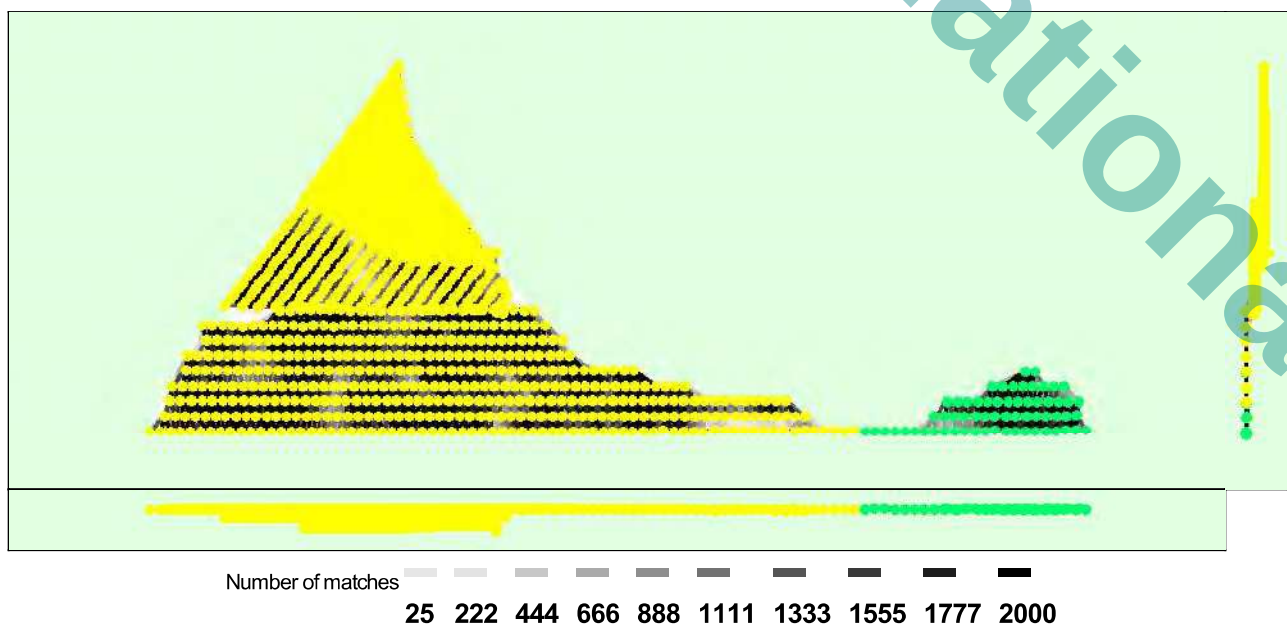


Figure 5: Computed image positions with links between matched images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images.

Quality Report



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Important: Click on the different icons for:



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Additional information about the sections



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Summary



Project	Block3-rev2-20180301
Processed	2018-03-04 03:03:54
Camera Model Name(s)	ILCE-QX1_E16mmF2.8_16.0_5456x3632 (RGB), UMC-R10C_E16mmF2.8_16.0_5456x3632 (RGB)
Average Ground Sampling Distance (GSD)	10.11 cm / 3.98 in
Area Covered	77.5826 km ² / 7758.26 ha / 29.9703 sq. mi. / 19181 acres

Quality Check



Images	median of 85932 keypoints per image	
Dataset	4170 out of 4224 images calibrated (98%), all images enabled, 2 blocks	
Camera Optimization	0.22% relative difference between initial and optimized internal camera parameters	
Matching	median of 19258.7 matches per calibrated image	
Georeferencing	yes, 162 GCPs (162 3D), mean RMS error = 0.262 m	

Preview

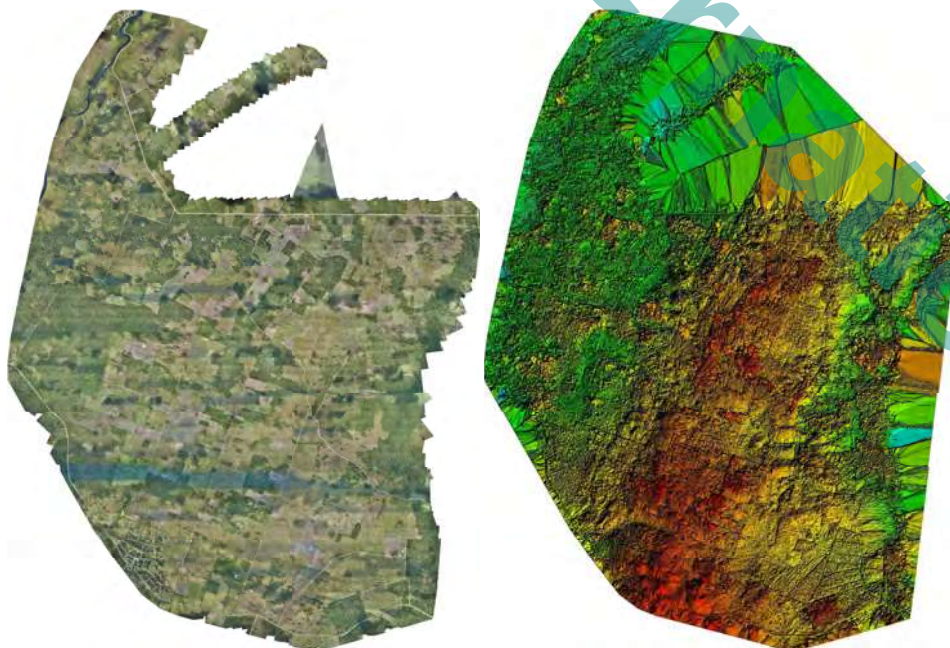


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	4170 out of 4224
Number of Geolocated Images	4214 out of 4224

Initial Image Positions

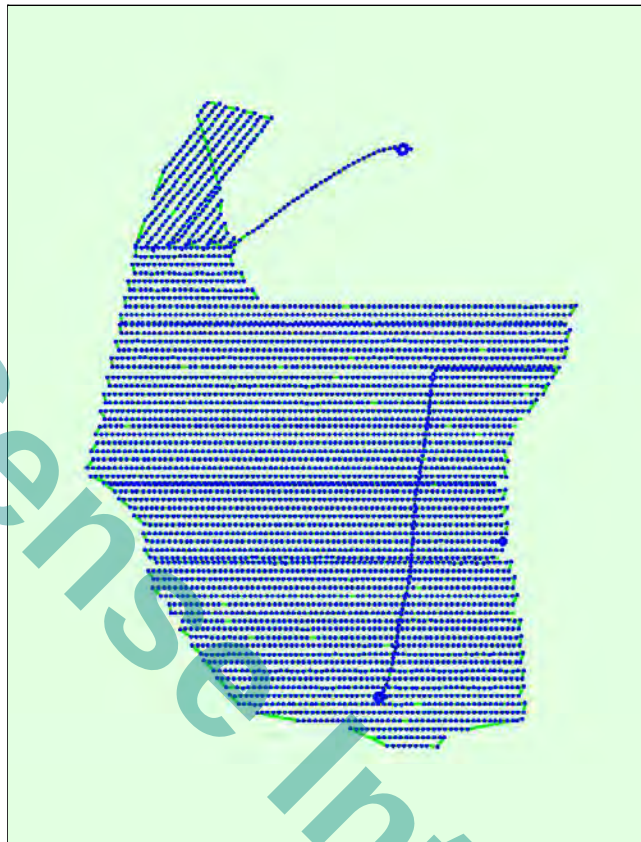


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions



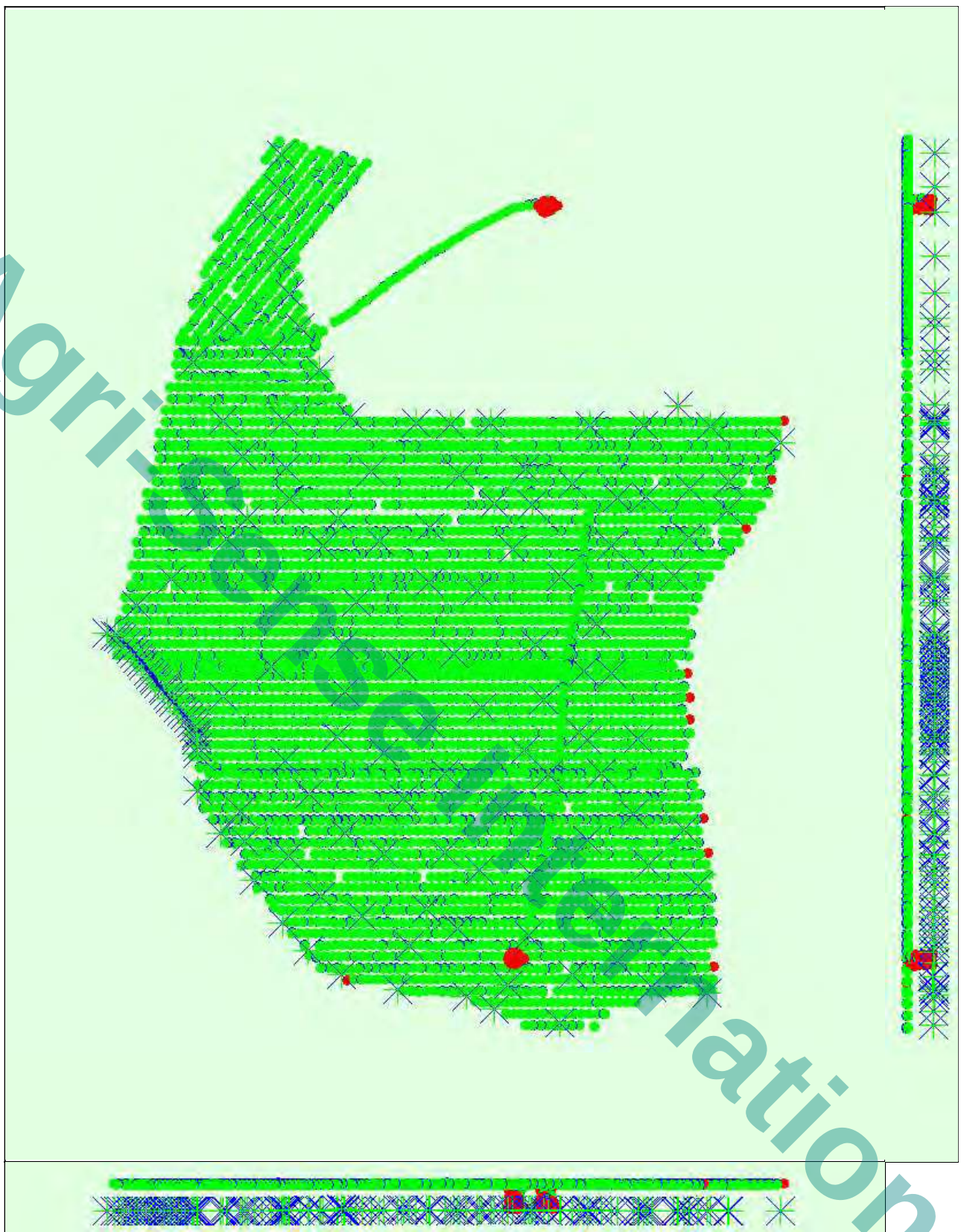


Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane). Red dots indicate disabled or uncalibrated images.

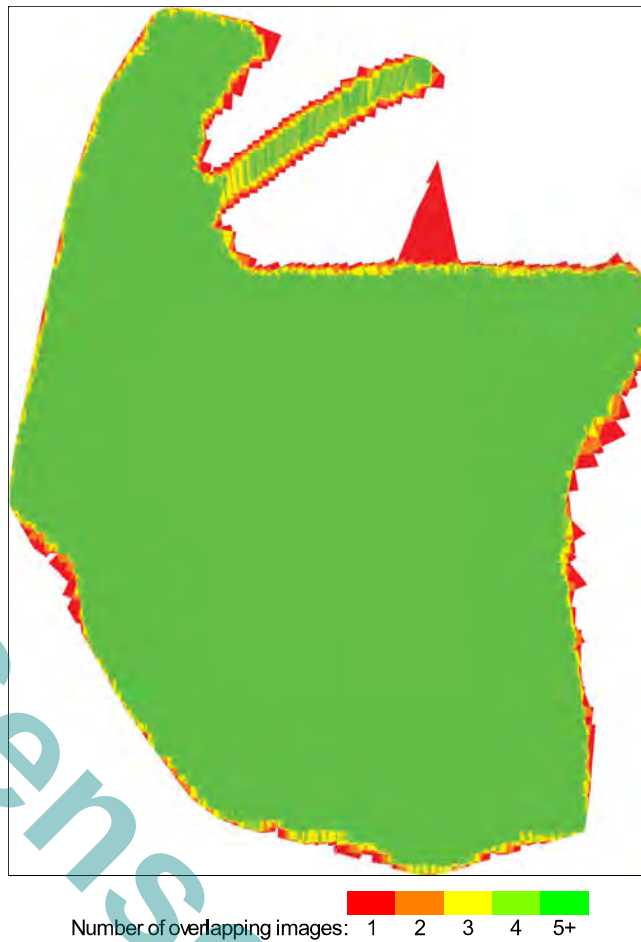


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint matches is also sufficient for these areas (see Figure 5 for keypoint matches).

Bundle Block Adjustment Details

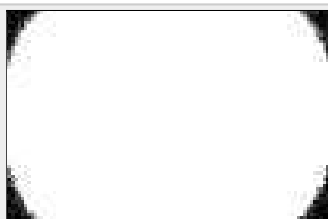
Number of 2D Keypoint Observations for Bundle Block Adjustment	80831447
Number of 3D Points for Bundle Block Adjustment	29599772
Mean Reprojection Error [pixels]	0.231

Internal Camera Parameters

ILCE-QX1_E16mmF2.8_16.0_5456x3632 (RGB). Sensor Dimensions: 23.333 [mm] x 15.533 [mm]

EXIF ID: ILCE-QX1_E16mmF2.8_16.0_5456x3632

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3741.257 [pixel] 16.000 [mm]	2728.000 [pixel] 11.667 [mm]	1816.000 [pixel] 7.766 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	3731.667 [pixel] 15.959 [mm]	2676.441 [pixel] 11.446 [mm]	1772.055 [pixel] 7.578 [mm]	-0.082	0.161	-0.099	-0.002	-0.002



The number of Automatic Tie Points (ATPs) per pixel, averaged over all images of the camera model, is color coded between black and white. White indicates that, on average, more than 16 ATPs have been extracted at the pixel location. Black indicates that, on average, 0 ATPs have been extracted at the pixel location. Click on the image to see the average direction and magnitude of the re-projection error for each pixel. Note that the vectors are scaled for better visualization.

Quality Report



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Important: Click on the different icons for:



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Additional information about the sections



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Summary



Project	Block4-AI-20180320
Processed	2018-03-22 19:00:32
Camera Model Name(s)	FC6310_8.8_4864x3648 (RGB), FC6310_8.8_5472x3078 (RGB)(2), ILCE-QX1_E16mmF2.8_16.0_5456x3632 (RGB), UMC-R10C_E16mmF2.8_16.0_5456x3632 (RGB), FC6310_8.8_5472x3078 (RGB)(5)
Average Ground Sampling Distance (GSD)	10.07 cm / 3.96 in
Area Covered	62.7639 km ² / 6276.39 ha / 24.2458 sq. mi. / 15517.3 acres

Quality Check



Images	median of 85460 keypoints per image	
Dataset	3707 out of 3715 images calibrated (99%), 20 images disabled	
Camera Optimization	7% relative difference between initial and optimized internal camera parameters	
Matching	median of 23911.6 matches per calibrated image	
Georeferencing	yes, 103 GCPs (103 3D), mean RMS error = 0.657 m	

Preview

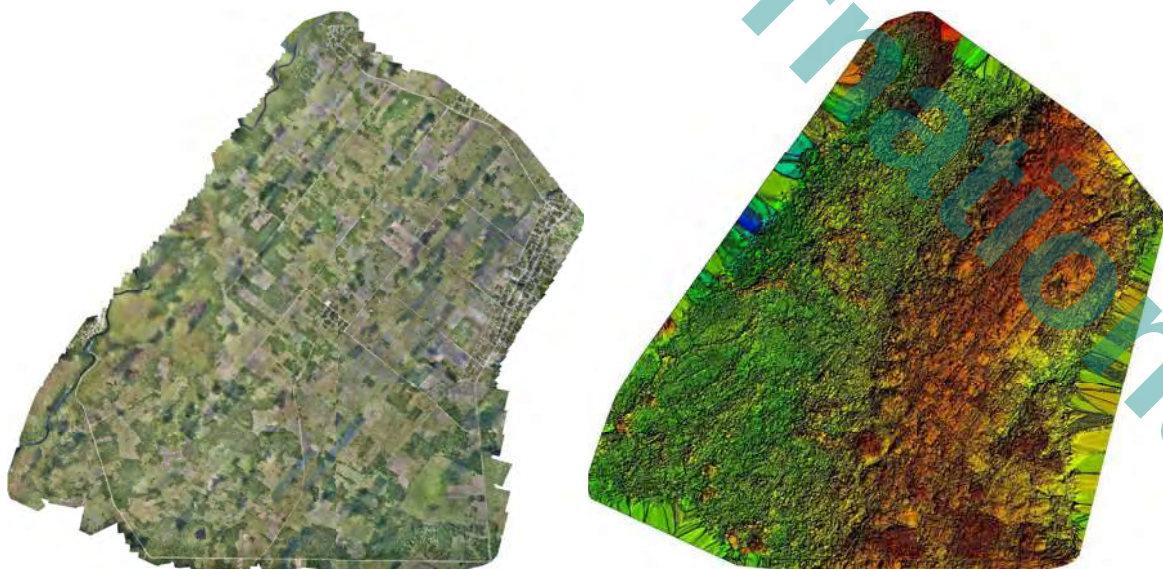


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	3707 out of 3735
Number of Geolocated Images	3715 out of 3735

Initial Image Positions



Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions



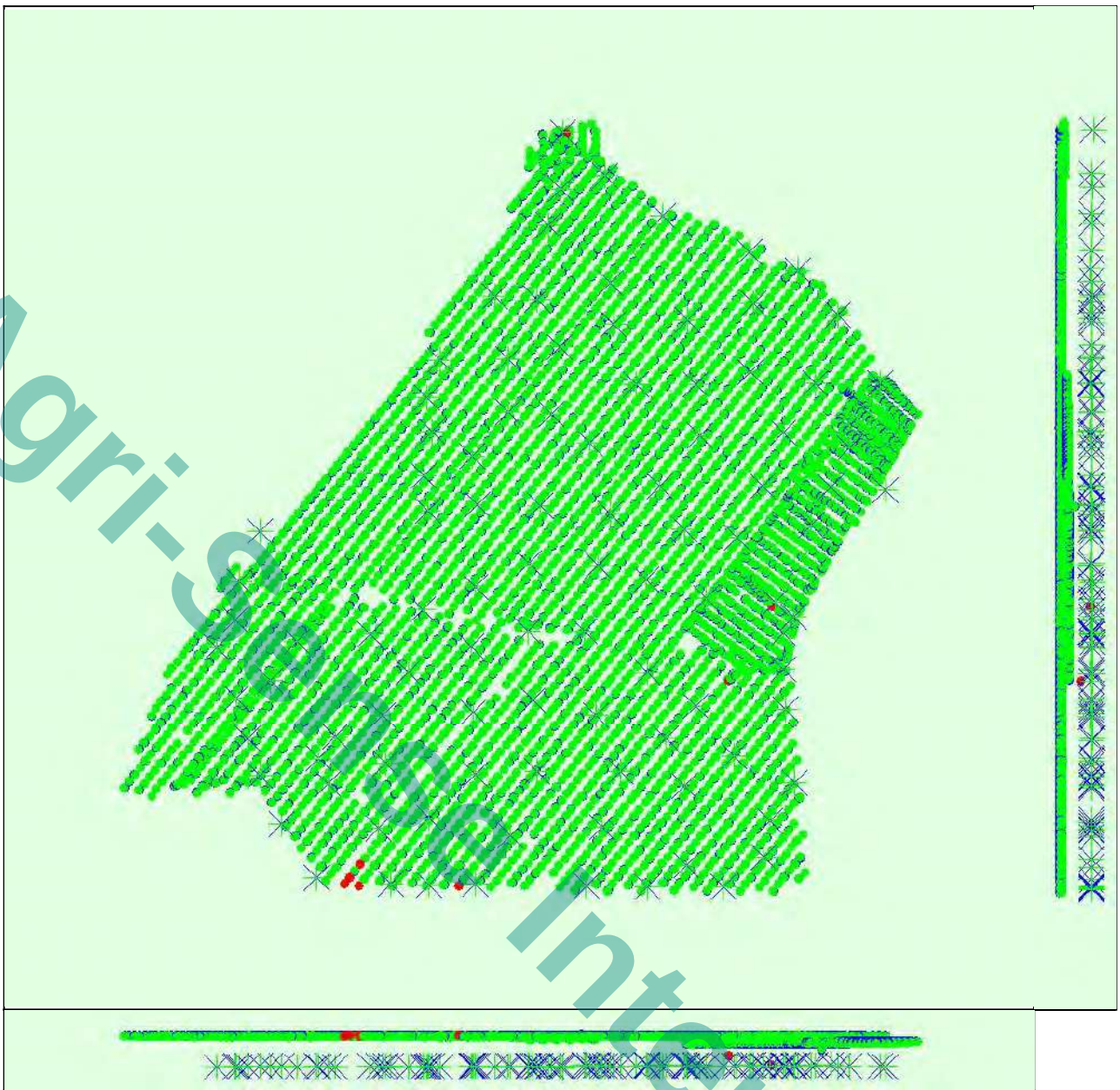


Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane). Red dots indicate disabled or uncalibrated images.

Overlap



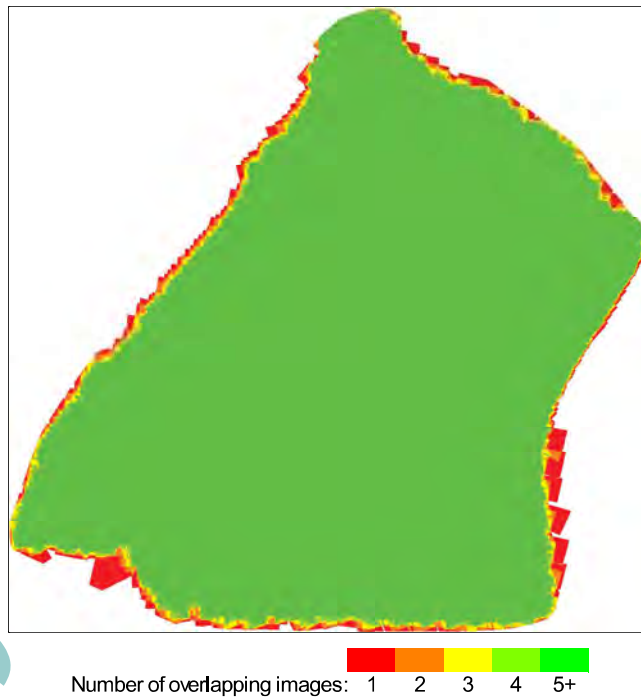


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated, Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint matches is also sufficient for these areas (see Figure 5 for keypoint matches).

Bundle Block Adjustment Details

Number of 2D Keypoint Observations for Bundle Block Adjustment	86674740
Number of 3D Points for Bundle Block Adjustment	29486261
Mean Reprojection Error [pixels]	0.232

Internal Camera Parameters

FC6310_8.8_4864x3648 (RGB). Sensor Dimensions: 11.407 [mm] x 8.556 [mm]

EXIF ID: FC6310_8.8_4864x3648

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3666.955 [pixel] 8.600 [mm]	2432.001 [pixel] 5.704 [mm]	1823.999 [pixel] 4.278 [mm]	0.004	-0.017	0.019	-0.000	0.000
Optimized Values	3162.578 [pixel] 7.417 [mm]	2450.751 [pixel] 5.748 [mm]	1877.199 [pixel] 4.403 [mm]	-0.009	-0.010	0.008	0.001	0.001



The number of Automatic Tie Points (ATPs) per pixel, averaged over all images of the camera model, is color coded between black and white. White indicates that, on average, more than 16 ATPs have been extracted at the pixel location. Black indicates that, on average, 0 ATPs have been extracted at the pixel location. Click on the image to see the average direction and magnitude of the re-projection error for each pixel. Note that the vectors are scaled for better visualization.

Internal Camera Parameters

FC6310_8.8_5472x3078 (RGB)(2). Sensor Dimensions: 12.833 [mm] x 7.219 [mm]

EXIF ID: FC6310_8.8_5472x3078

Quality Report



Generated with Pix4Dmapper Pro version 3.2.10 Preview



Important: Click on the different icons for:



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Additional information about the sections



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Summary



Project	bl5_both_rev2lpt_all_sdw_3210_20180503
Processed	2018-05-22 23:03:48
Camera Model Name(s)	ILCE-QX1_E16mmF2.8_16.0_5456x3632 (RGB), FC6310_8.8_5472x3078 (RGB), ILCE-QX1_16.0_5456x3632 (RGB), UMC-R10C_E16mmF2.8_16.0_5456x3632 (RGB)
Average Ground Sampling Distance (GSD)	10.73 cm / 4.22 in
Area Covered	90,3206 km ² / 9032,06 ha / 34,891 sq. mi. / 22330,3 acres
Time for Initial Processing (without report)	06h:01m:34s

Quality Check



Images	median of 27601 keypoints per image	
Dataset	5180 out of 5195 images calibrated (99%), 3 images disabled, 2 blocks	
Camera Optimization	3.87% relative difference between initial and optimized internal camera parameters	
Matching	median of 8475.1 matches per calibrated image	
Georeferencing	yes, 129 GCPs (129 3D), mean RMS error = 0.527 m	



Preview

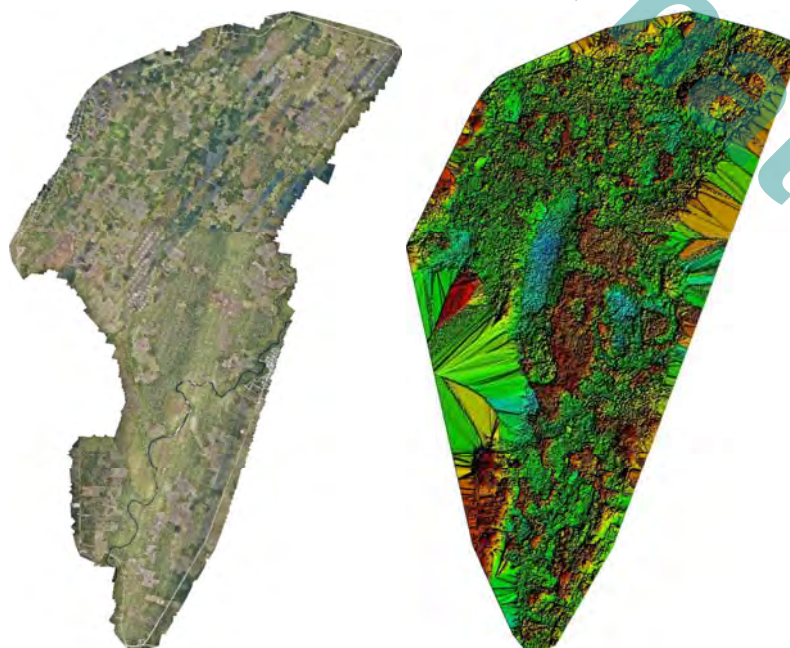


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	5180 out of 5198
Number of Geolocated Images	5183 out of 5198

Initial Image Positions

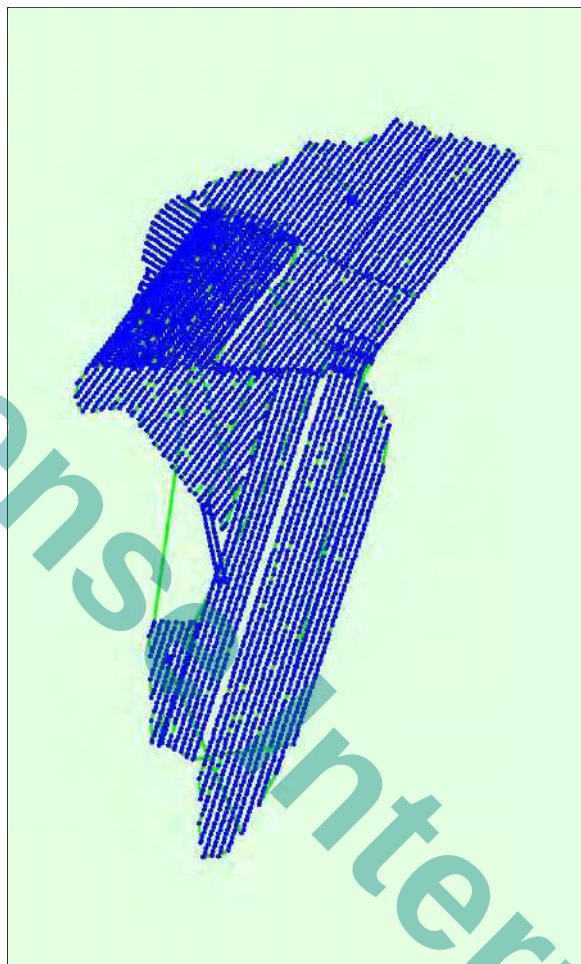


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions



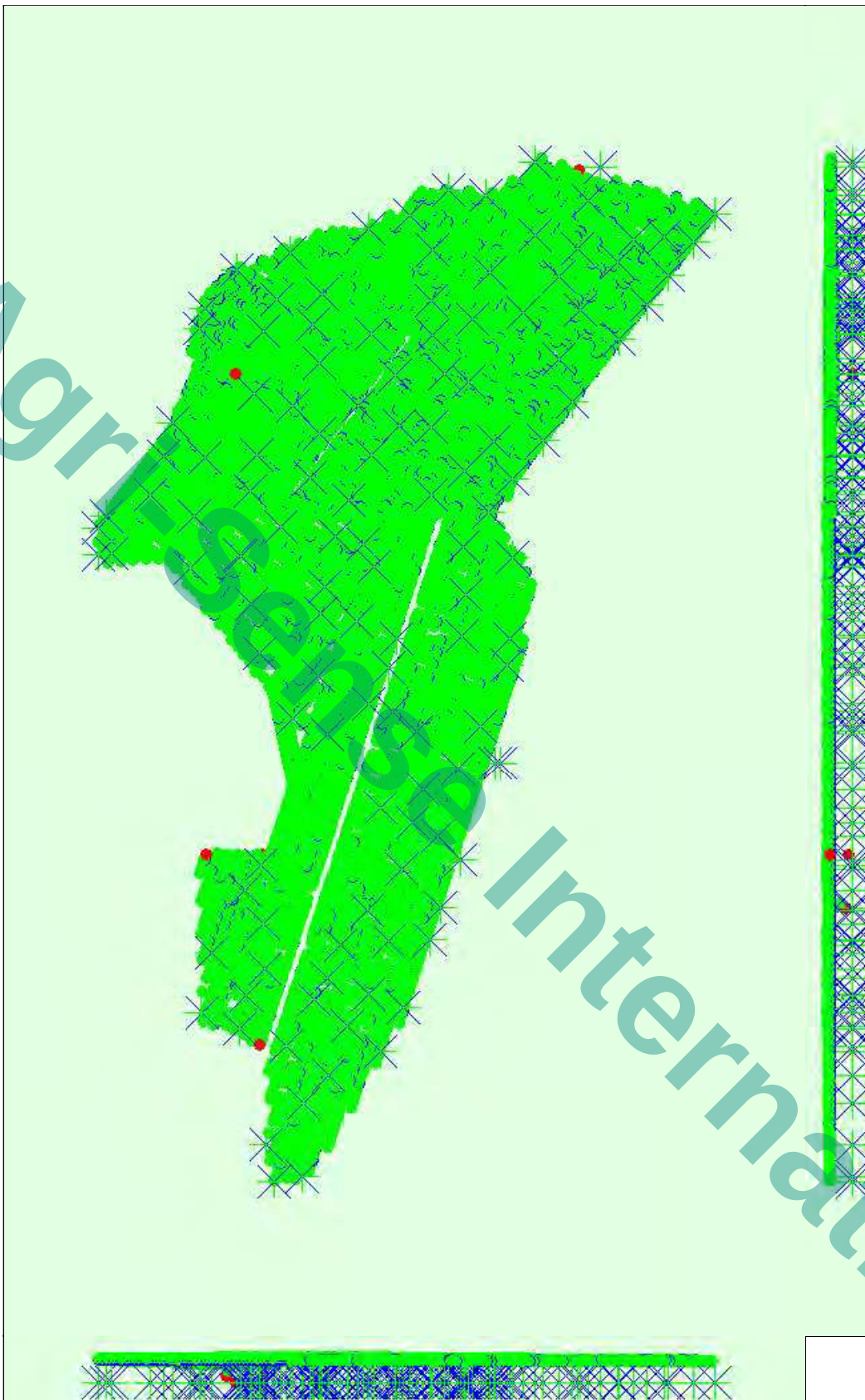


Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane). Red dots indicate disabled or uncalibrated images.

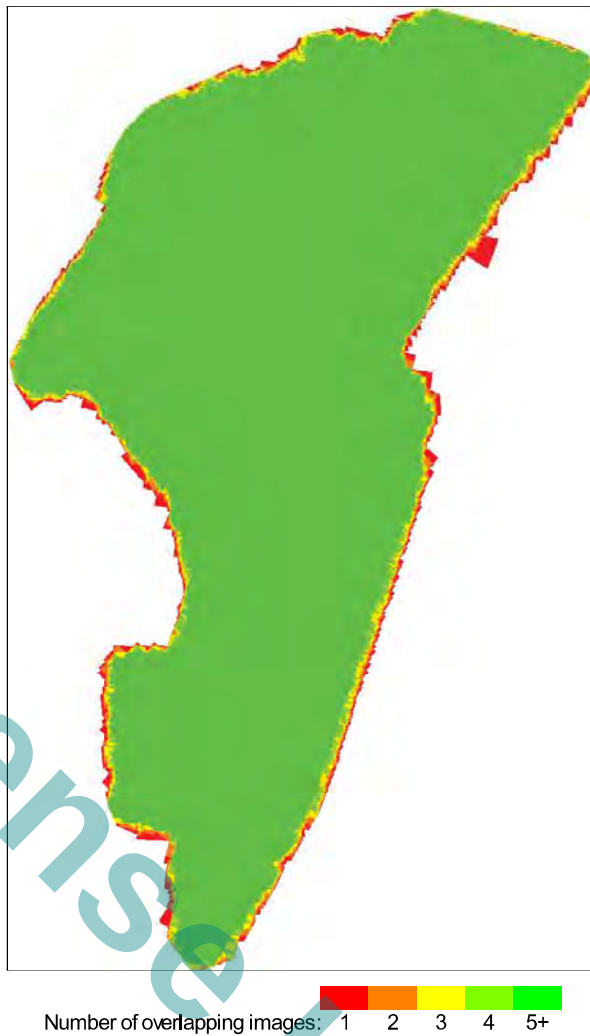


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint matches is also sufficient for these areas (see Figure 5 for keypoint matches).

Bundle Block Adjustment Details

Number of 2D Keypoint Observations for Bundle Block Adjustment	46866719
Number of 3D Points for Bundle Block Adjustment	15262962
Mean Reprojection Error [pixels]	0.169

Internal Camera Parameters

ILCE-QX1_E16mmF2.8_16.0_5456x3632 (RGB). Sensor Dimensions: 23.333 [mm] x 15.533 [mm]

EXIF ID: ILCE-QX1_E16mmF2.8_16.0_5456x3632

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3741.257 [pixel] 16.000 [mm]	2728.000 [pixel] 11.667 [mm]	1816.000 [pixel] 7.766 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	3789.176 [pixel] 16.205 [mm]	2675.260 [pixel] 11.441 [mm]	1781.392 [pixel] 7.618 [mm]	-0.066	0.114	-0.030	-0.002	-0.003

Quality Report



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Important: Click on the different icons for:



Help to analyze the results in the Quality Report



Additional information about the sections



Click [here](#) for additional tips to analyze the Quality Report

Summary



Project	bl6_all_sdw_3210_20180420
Processed	2018-04-24 09:57:01
Camera Model Name(s)	UMC-R10C_E16mmF2.8_16.0_5456x3632 (RGB), ILCE-QX1_E16mmF2.8_16.0_5456x3632 (RGB), FC6310_8.8_4864x3648 (RGB)
Average Ground Sampling Distance (GSD)	9.99 cm / 3.93 in
Area Covered	50,3066 km ² / 5030.66 ha / 19.4335 sq. mi. / 12437.5 acres

Quality Check



Images	median of 30586 keypoints per image	
Dataset	2823 out of 2858 images calibrated (98%), all images enabled	
Camera Optimization	6.39% relative difference between initial and optimized internal camera parameters	
Matching	median of 8222.69 matches per calibrated image	
Georeferencing	yes, 94 GCPs (94 3D), mean RMS error = 0.154 m	

Preview

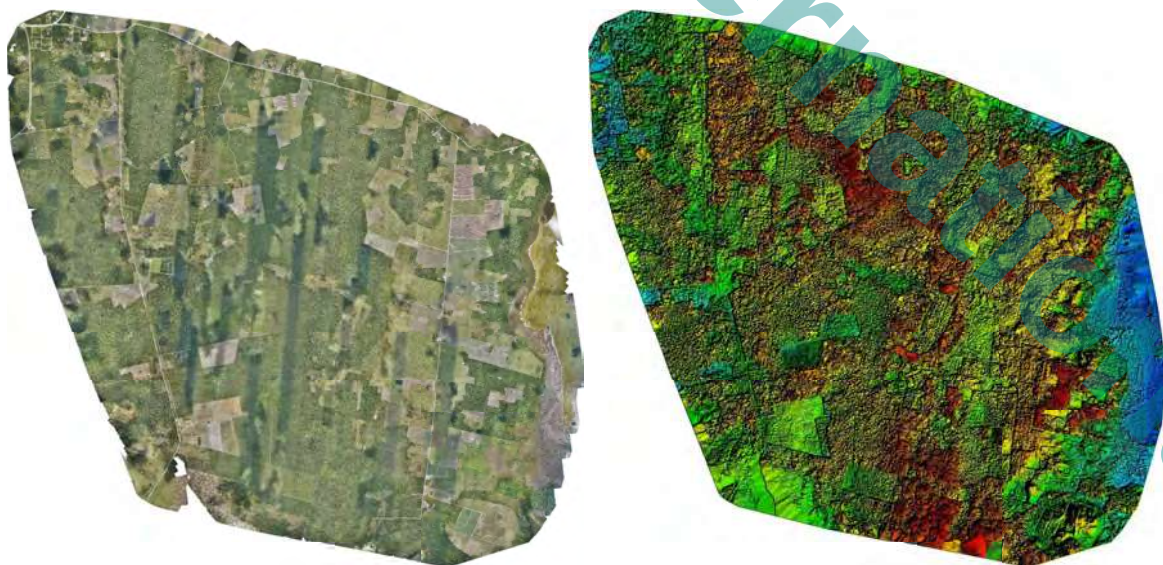


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	2823 out of 2858
Number of Geolocated Images	2853 out of 2858

Initial Image Positions

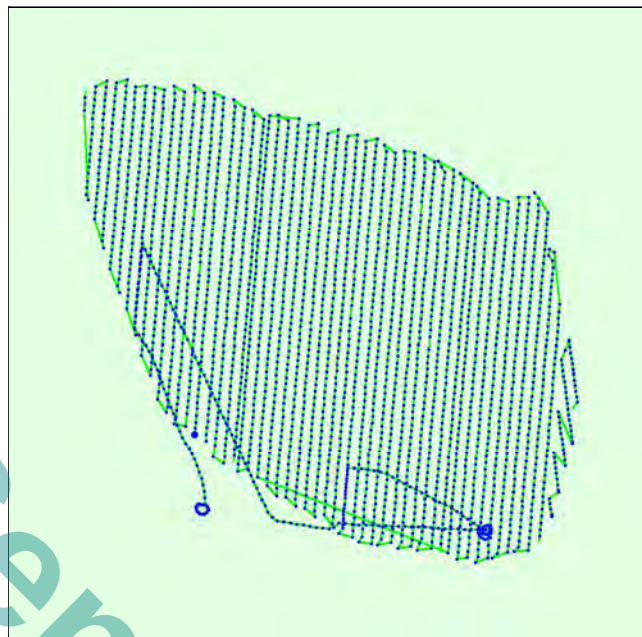


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions



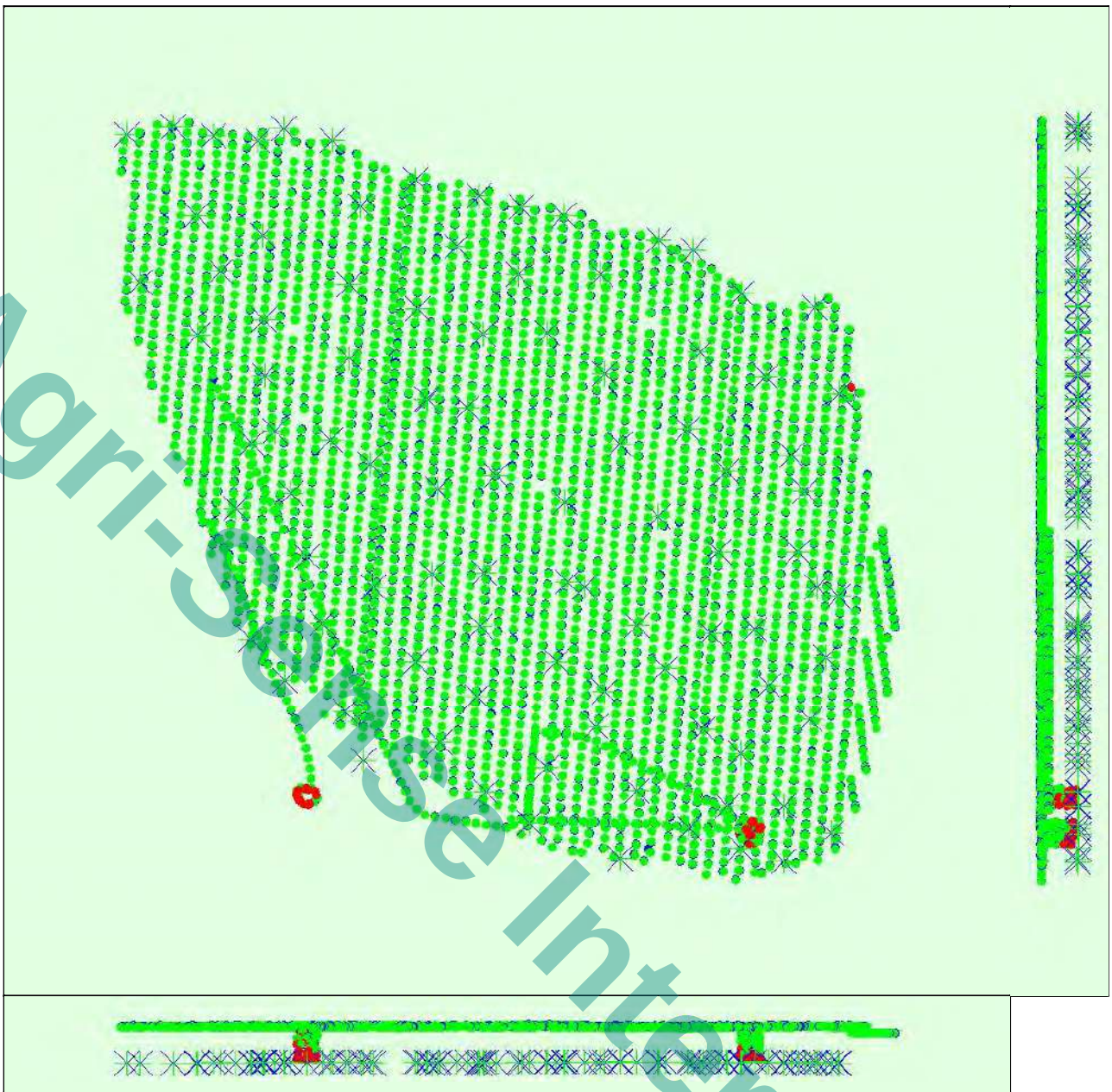
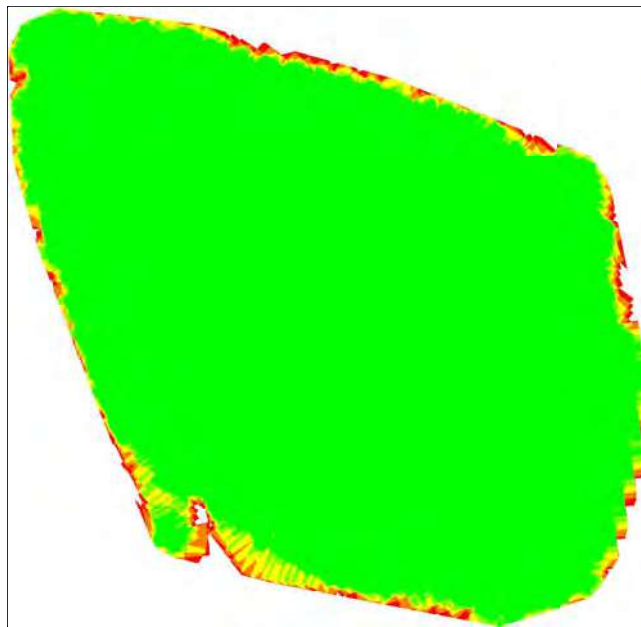


Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane). Red dots indicate disabled or uncalibrated images.

Overlap





Number of overlapping images: 1 2 3 4 5+

Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint matches is also sufficient for these areas (see Figure 5 for keypoint matches).

Bundle Block Adjustment Details

Number of 2D Keypoint Observations for Bundle Block Adjustment	24043512
Number of 3D Points for Bundle Block Adjustment	9097028
Mean Reprojection Error [pixels]	0.164

Internal Camera Parameters

UMC-R10C_E16mmF2.8_16.0_5456x3632 (RGB). Sensor Dimensions: 23.333 [mm] x 15.533 [mm]

EXIF ID: UMC-R10C_E16mmF2.8_16.0_5456x3632

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3741.257 [pixel] 16.000 [mm]	2728.000 [pixel] 11.667 [mm]	1816.000 [pixel] 7.766 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	3754.738 [pixel] 16.058 [mm]	2694.507 [pixel] 11.523 [mm]	1765.449 [pixel] 7.550 [mm]	-0.061	0.090	0.002	-0.003	-0.000

The number of Automatic Tie Points (ATPs) per pixel, averaged over all images of the camera model, is color coded between black and white. White indicates that, on average, more than 16 ATPs have been extracted at the pixel location. Black indicates that, on average, 0 ATPs have been extracted at the pixel location. Click on the image to see the average direction and magnitude of the re-projection error for each pixel. Note that the vectors are scaled for better visualization.

Internal Camera Parameters

ILCE-QX1_E16mmF2.8_16.0_5456x3632 (RGB). Sensor Dimensions: 23.333 [mm] x 15.533 [mm]

EXIF ID: ILCE-QX1_E16mmF2.8_16.0_5456x3632

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
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Quality Report



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Important: Click on the different icons for:



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Additional information about the sections



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Summary



Project	block7_all_3120_sdw_20180410
Processed	2018-04-12 10:07:40
Camera Model Name(s)	UMC-R10C_E16mmF2.8_16.0_5456x3632 (RGB)
Average Ground Sampling Distance (GSD)	10.09 cm / 3.97 in
Area Covered	63.1997 km ² / 6319.97 ha / 24.4142 sq. mi. / 15625.1 acres

Quality Check



Images	median of 30281 keypoints per image	
Dataset	3303 out of 3325 images calibrated (99%), all images enabled	
Camera Optimization	0.53% relative difference between initial and optimized internal camera parameters	
Matching	median of 10271.5 matches per calibrated image	
Georeferencing	yes, 102 GCPs (102 3D), mean RMS error = 0.016 m	



Preview

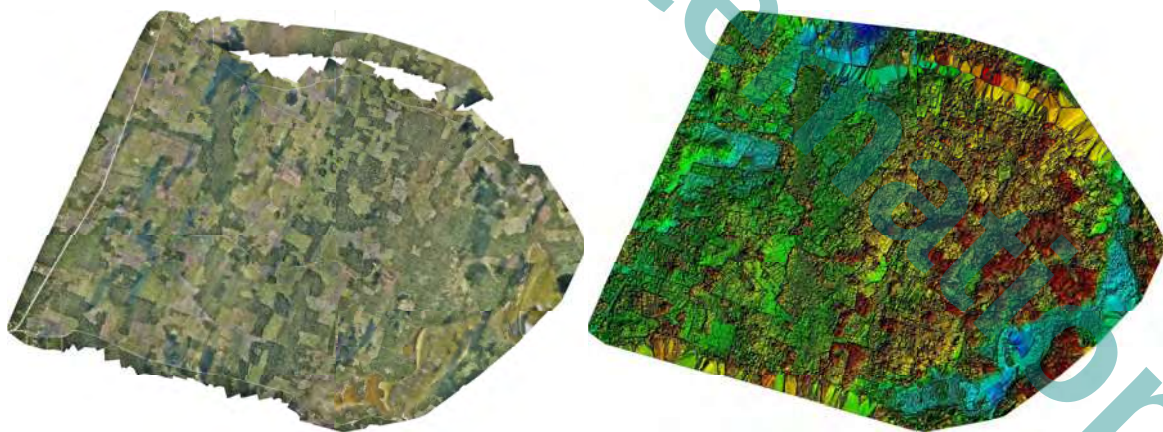


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	3303 out of 3325
Number of Geolocated Images	3319 out of 3325

Initial Image Positions

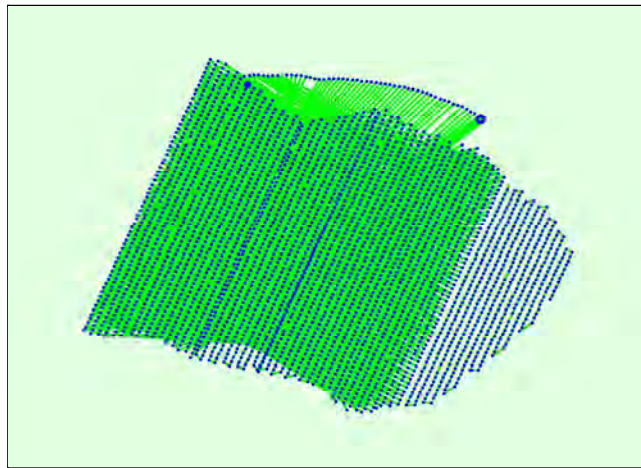


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions

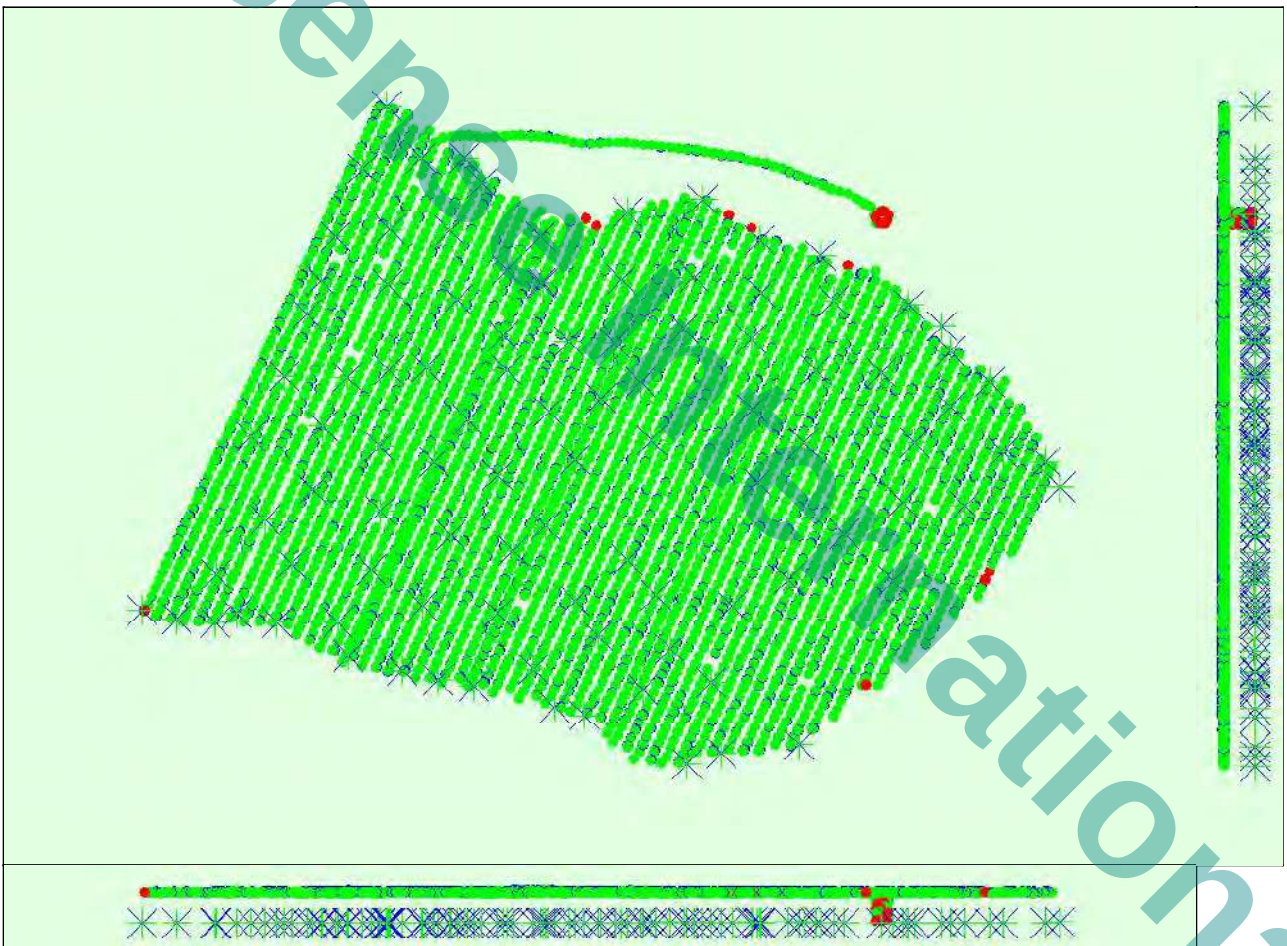


Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane). Red dots indicate disabled or uncalibrated images.

Overlap

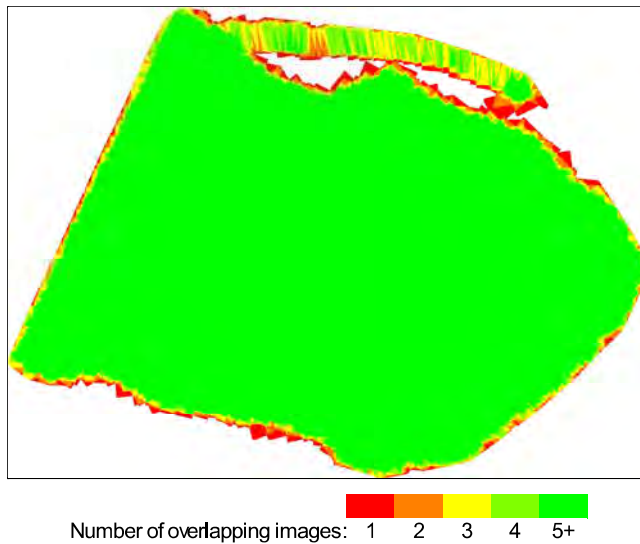


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint matches is also sufficient for these areas (see Figure 5 for keypoint matches).

Bundle Block Adjustment Details

Number of 2D Keypoint Observations for Bundle Block Adjustment	35809916
Number of 3D Points for Bundle Block Adjustment	12776225
Mean Reprojection Error [pixels]	0.164

Internal Camera Parameters

UMC-R10C_E16mmF2.8_16.0_5456x3632 (RGB). Sensor Dimensions: 23.333 [mm] x 15.533 [mm]

EXIF ID: UMC-R10C_E16mmF2.8_16.0_5456x3632

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3741.257 [pixel] 16.000 [mm]	2728.000 [pixel] 11.667 [mm]	1816.000 [pixel] 7.766 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	3721.163 [pixel] 15.914 [mm]	2700.897 [pixel] 11.551 [mm]	1765.735 [pixel] 7.551 [mm]	-0.064	0.096	-0.006	-0.003	0.000

The number of Automatic Tie Points (ATPs) per pixel, averaged over all images of the camera model, is color coded between black and white. White indicates that, on average, more than 16 ATPs have been extracted at the pixel location. Black indicates that, on average, 0 ATPs have been extracted at the pixel location. Click on the image to see the average direction and magnitude of the reprojection error for each pixel. Note that the vectors are scaled for better visualization.

2D Keypoints Table

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	30281	10272
Mn	8925	94
Max	44163	25321
Mean	29474	10842

3D Points from 2D Keypoint Matches

Number of 3D Points Observed

In 2 Images	8380729
In 3 Images	2099741
In 4 Images	919045
In 5 Images	502732
In 6 Images	315936
In 7 Images	208718
In 8 Images	138778
In 9 Images	96307
In 10 Images	61458
In 11 Images	31889
In 12 Images	13793
In 13 Images	5066
In 14 Images	1587
In 15 Images	335
In 16 Images	100
In 17 Images	8
In 18 Images	3

2D Keypoint Matches

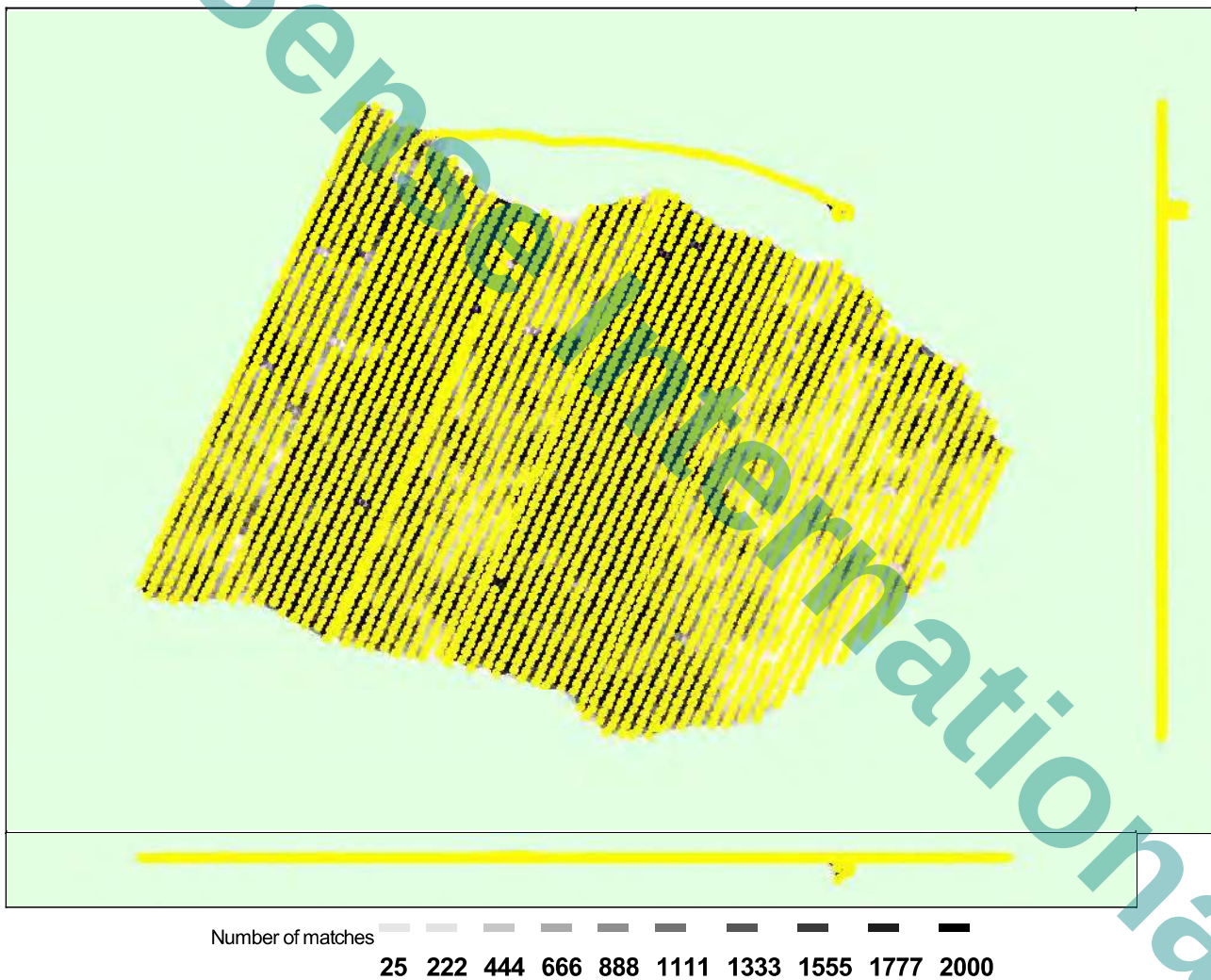


Figure 5: Computed image positions with links between matched images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images.

Geolocation Details

Quality Report



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Summary



Project	bl8-rev3
Processed	2018-03-21 14:00:19
Camera Model Name(s)	UMC-R10C_E16mmF2.8_16.0_5456x3632 (RGB)(1), FC6310_8.8_5472x3078 (RGB), UMC-R10C_E16mmF2.8_16.0_5456x3632 (RGB)(3), ILCE-QX1_E16mmF2.8_16.0_5456x3632 (RGB)
Average Ground Sampling Distance (GSD)	10.04 cm / 3.95 in
Area Covered	58.6158 km ² / 5861.58 ha / 22.6434 sq. mi. / 14491.8 acres

Quality Check



Images	median of 86200 keypoints per image	
Dataset	4359 out of 4477 images calibrated (97%), all images enabled, 3 blocks	
Camera Optimization	2.18% relative difference between initial and optimized internal camera parameters	
Matching	median of 17700.2 matches per calibrated image	
Georeferencing	yes, 99 GCPs (99 3D), mean RMS error = 0.21 m	

Preview

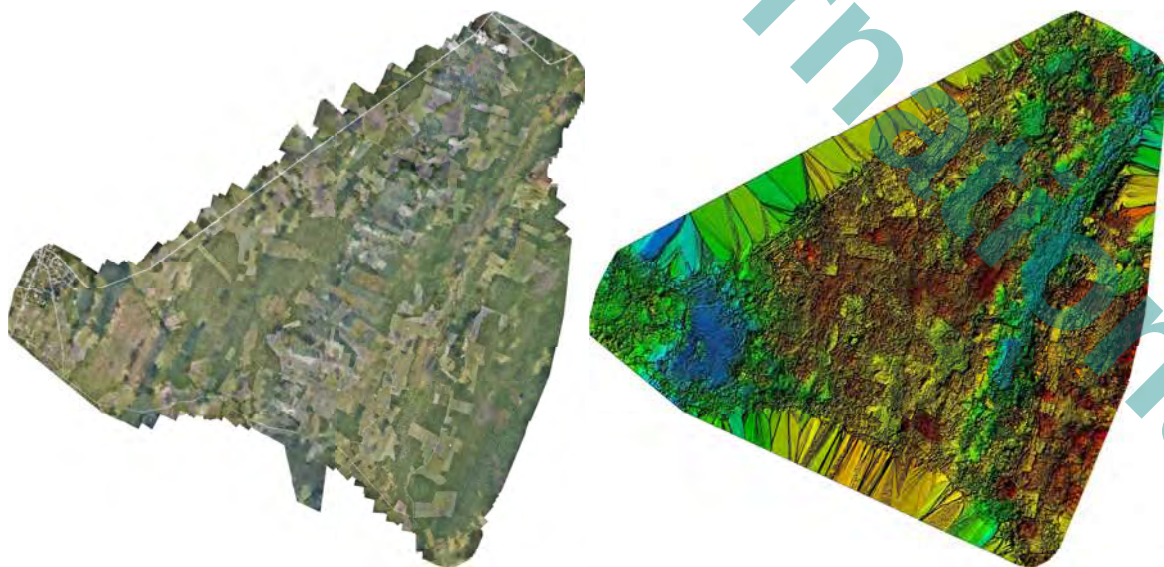


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	4359 out of 4477
Number of Geolocated Images	4435 out of 4477

Initial Image Positions

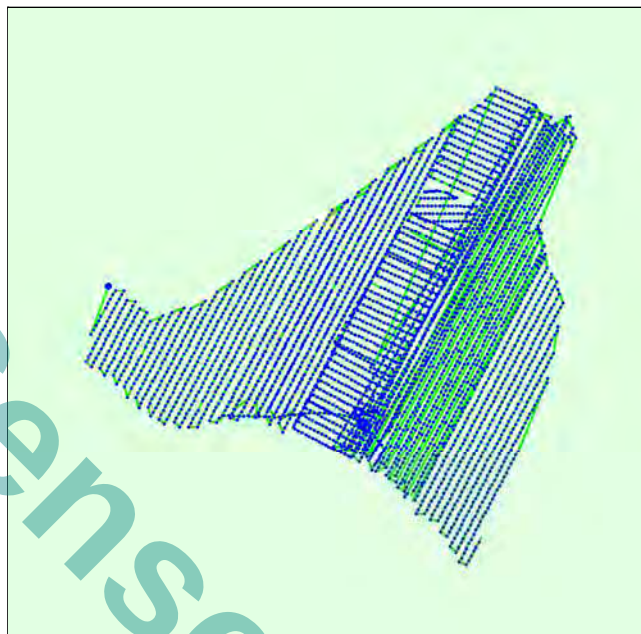


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions



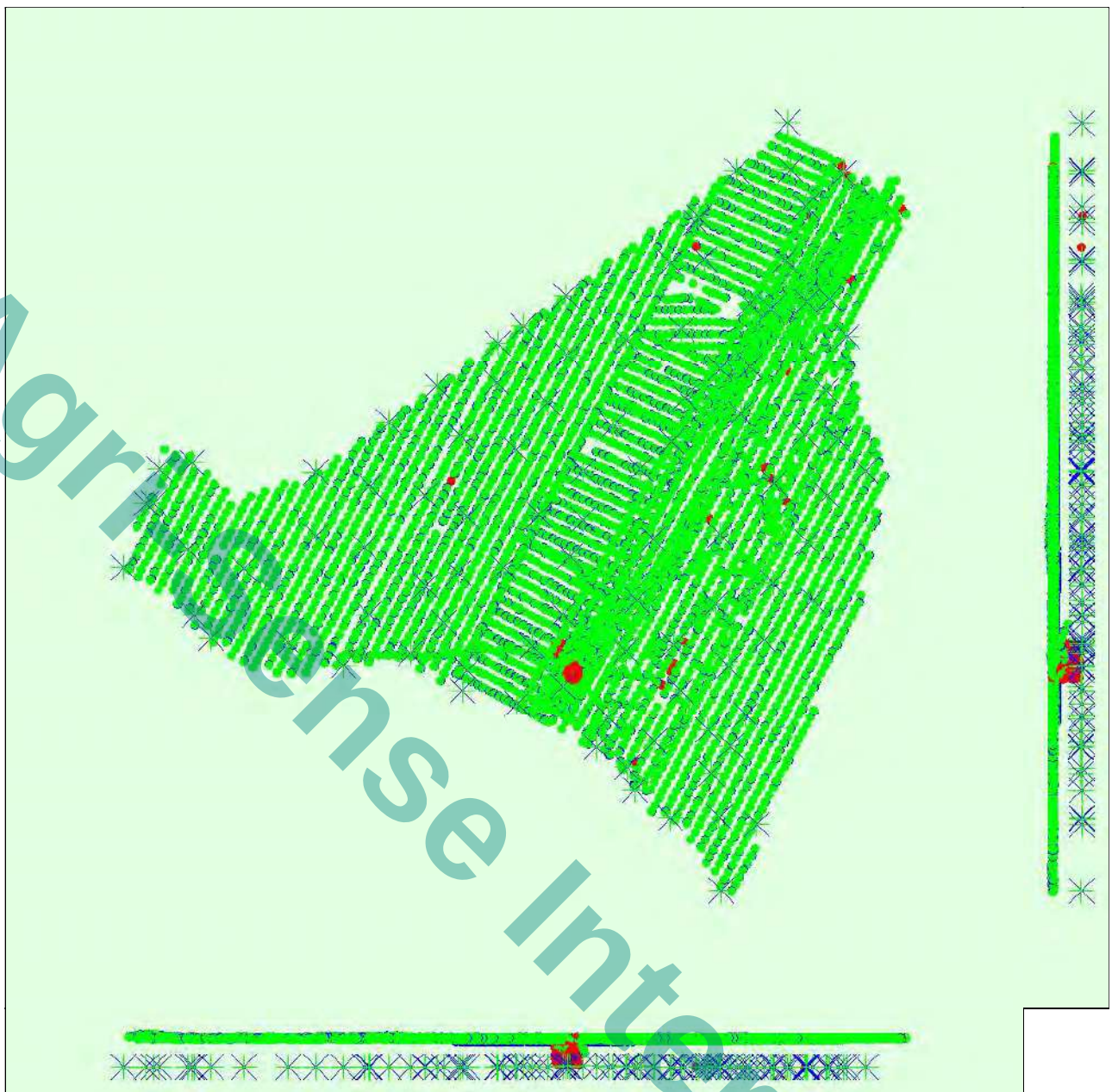


Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane). Red dots indicate disabled or uncalibrated images.

 Overlap





Number of overlapping images: 1 2 3 4 5+

Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint matches is also sufficient for these areas (see Figure 5 for keypoint matches).

Bundle Block Adjustment Details

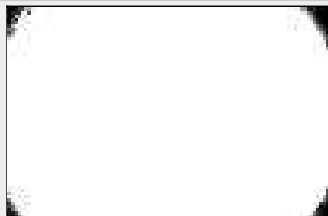
Number of 2D Keypoint Observations for Bundle Block Adjustment	80164482
Number of 3D Points for Bundle Block Adjustment	29612521
Mean Reprojection Error [pixels]	0.238

Internal Camera Parameters

UMC-R10C_E16mmF2.8_16.0_5456x3632 (RGB)(1). Sensor Dimensions: 23.333 [mm] x 15.533 [mm]

EXIF ID: UMC-R10C_E16mmF2.8_16.0_5456x3632

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3741.257 [pixel] 16.000 [mm]	2728.000 [pixel] 11.667 [mm]	1816.000 [pixel] 7.766 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	3747.225 [pixel] 16.026 [mm]	2690.070 [pixel] 11.504 [mm]	1752.520 [pixel] 7.495 [mm]	-0.064	0.106	-0.020	-0.003	-0.000



The number of Automatic Tie Points (ATPs) per pixel, averaged over all images of the camera model, is color coded between black and white. White indicates that, on average, more than 16 ATPs have been extracted at the pixel location. Black indicates that, on average, 0 ATPs have been extracted at the pixel location. Click on the image to see the average direction and magnitude of the re-projection error for each pixel. Note that the vectors are scaled for better visualization.

Internal Camera Parameters

FC6310_8.8_5472x3078 (RGB). Sensor Dimensions: 12.833 [mm] x 7.219 [mm]

EXIF ID: FC6310_8.8_5472x3078

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
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Quality Report



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Important: Click on the different icons for:



Help to analyze the results in the Quality Report



Additional information about the sections



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Summary



Project	bl9_both_part2image_sdw_3210_20180503
Processed	2018-05-14 05:10:03
Camera Model Name(s)	UMC-R10C_16.0_5456x3632 (RGB), ILCE-QX1_16.0_5456x3632 (RGB)
Average Ground Sampling Distance (GSD)	11.08 cm / 4.36 in
Area Covered	121.467 km ² / 12146.7 ha / 46.9229 sq. mi. / 30030.7 acres
Time for Initial Processing (without report)	19h:20m:29s

Quality Check



Images	median of 28999 keypoints per image	
Dataset	6510 out of 6557 images calibrated (99%), 1 images disabled, 2 blocks	
Camera Optimization	0.33% relative difference between initial and optimized internal camera parameters	
Matching	median of 9130,18 matches per calibrated image	
Georeferencing	yes, 119 GCPs (119 3D), mean RMS error = 0.401 m	

Preview

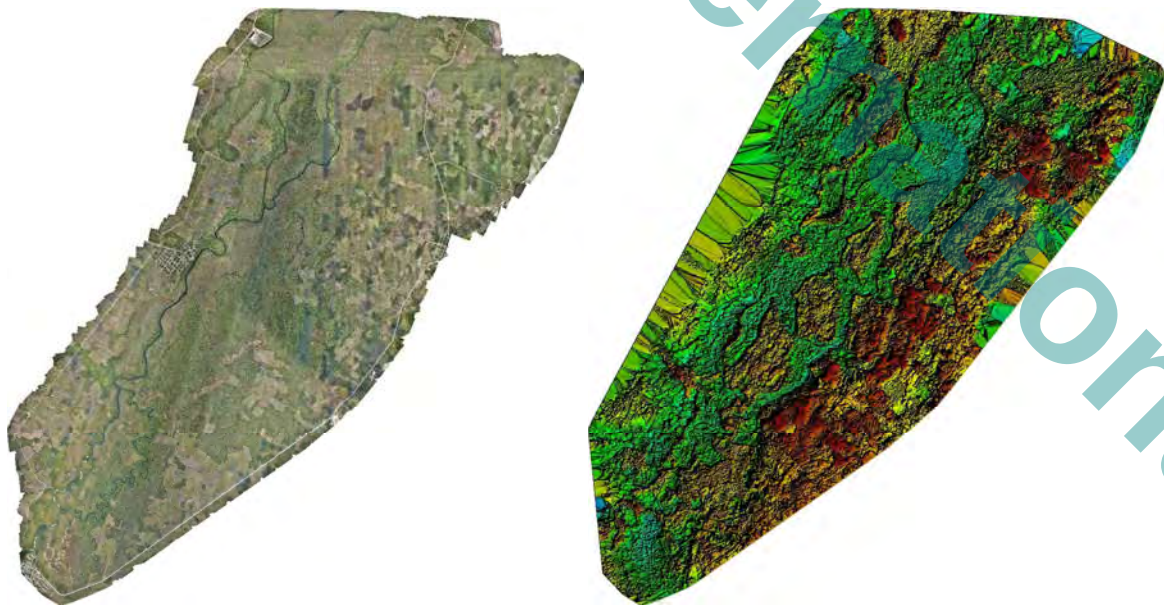


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	6510 out of 6558
Number of Geolocated Images	6558 out of 6558

Initial Image Positions

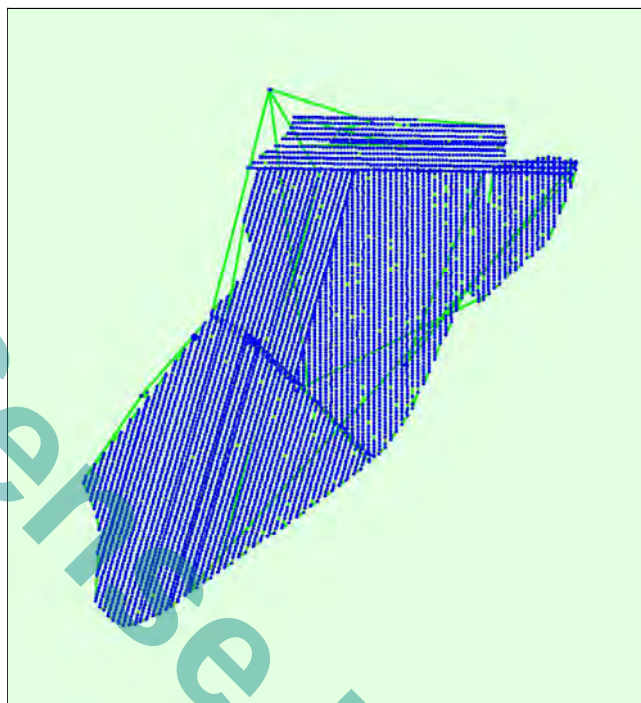


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions



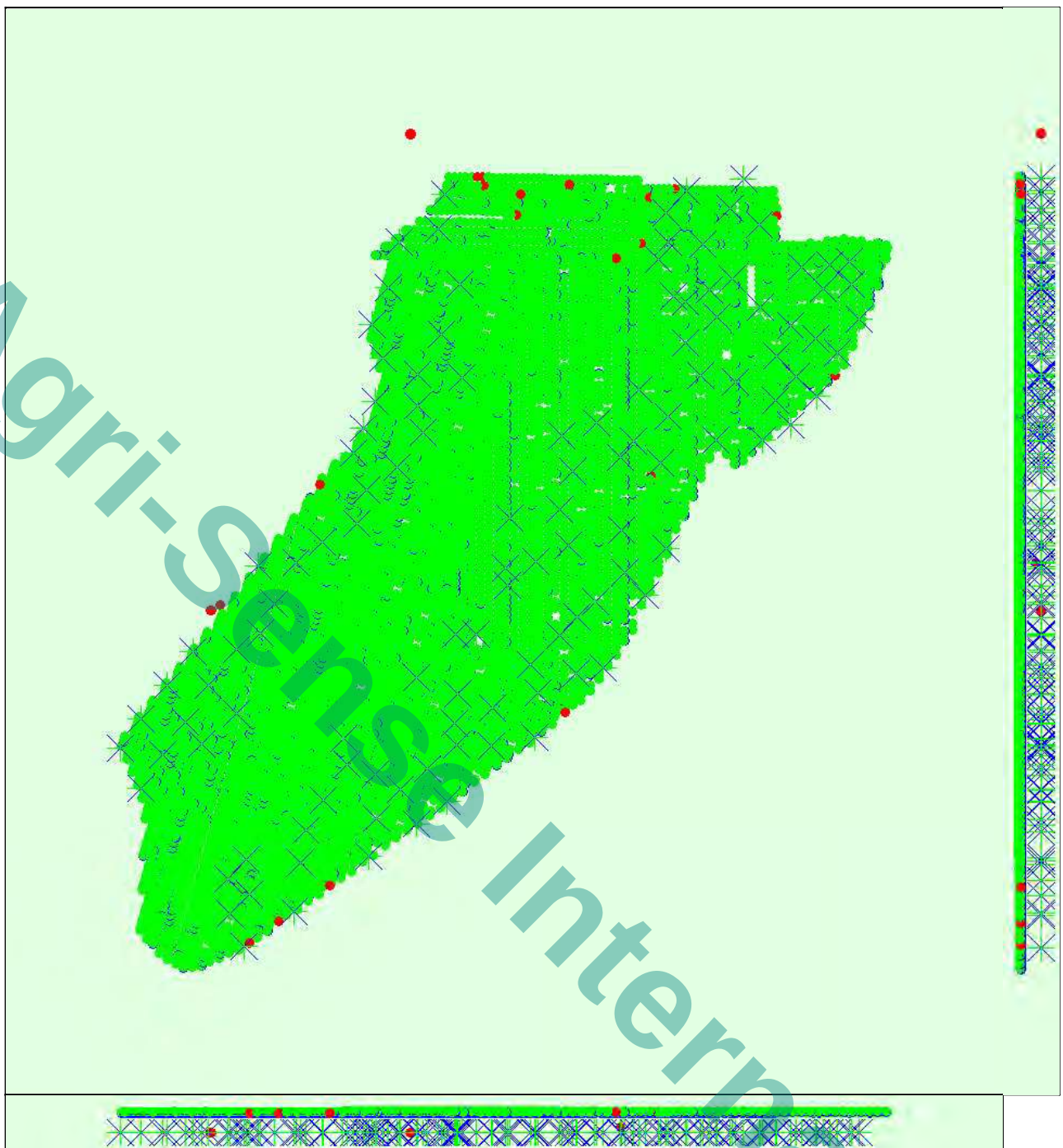


Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane). Red dots indicate disabled or uncalibrated images.

 Overlap



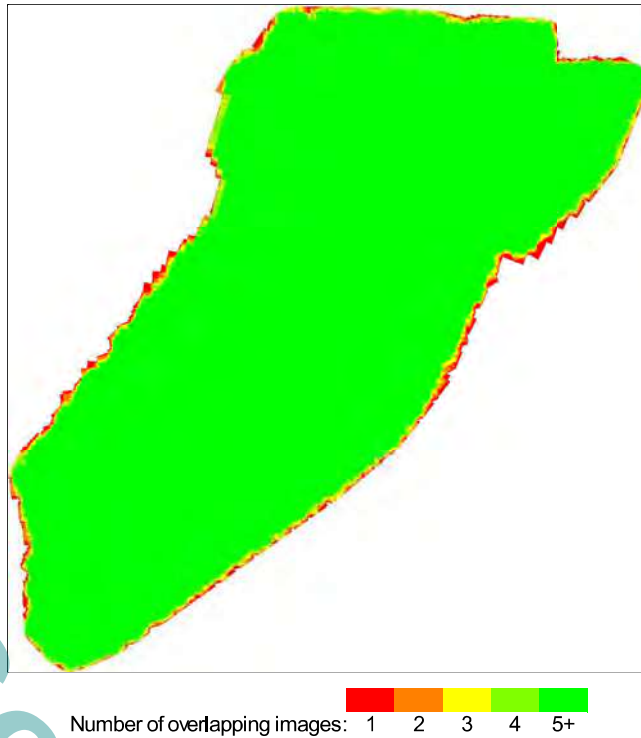


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint matches is also sufficient for these areas (see Figure 5 for keypoint matches).

Bundle Block Adjustment Details

Number of 2D Keypoint Observations for Bundle Block Adjustment	64565605
Number of 3D Points for Bundle Block Adjustment	20421057
Mean Reprojection Error [pixels]	0.171

Internal Camera Parameters

UMC-R10C_16.0_5456x3632 (RGB). Sensor Dimensions: 23.333 [mm] x 15.533 [mm]

EXIF ID: UMC-R10C_16.0_5456x3632

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3741.257 [pixel] 16.000 [mm]	2728.000 [pixel] 11.667 [mm]	1816.000 [pixel] 7.766 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	3728.473 [pixel] 15.945 [mm]	2692.367 [pixel] 11.514 [mm]	1773.341 [pixel] 7.584 [mm]	-0.066	0.111	-0.027	-0.003	0.000

The number of Automatic Tie Points (ATPs) per pixel, averaged over all images of the camera model, is color coded between black and white. White indicates that, on average, more than 16 ATPs have been extracted at the pixel location. Black indicates that, on average, 0 ATPs have been extracted at the pixel location. Click on the image to see the average direction and magnitude of the re-projection error for each pixel. Note that the vectors are scaled for better visualization.

Internal Camera Parameters

ILCE-QX1_16.0_5456x3632 (RGB). Sensor Dimensions: 23.333 [mm] x 15.533 [mm]

EXIF ID: ILCE-QX1_16.0_5456x3632

Quality Report



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Important: Click on the different icons for:



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Additional information about the sections



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Summary



Project	block10_all_3210_sdw_20180504
Processed	2018-05-10 10:11:37
Camera Model Name(s)	ILCE-QX1_16.0_5456x3632 (RGB)
Average Ground Sampling Distance (GSD)	10,81 cm / 4,25 in
Area Covered	65,5267 km ² / 6552,67 ha / 25,3131 sq. mi. / 16200,4 acres

Quality Check



Images	median of 22043 keypoints per image	
Dataset	3564 out of 3575 images calibrated (99%), all images enabled	
Camera Optimization	0,34% relative difference between initial and optimized internal camera parameters	
Matching	median of 9613.77 matches per calibrated image	
Georeferencing	yes, 102 GCPs (102 3D), mean RMS error = 0,108 m	

Preview

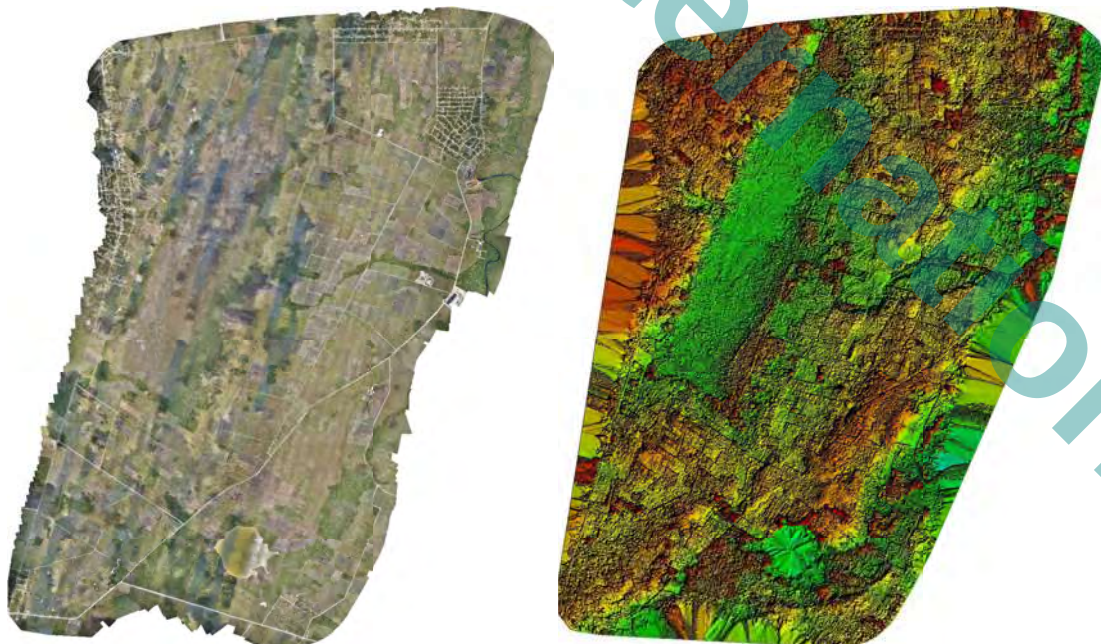


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	3564 out of 3575
Number of Geolocated Images	3575 out of 3575

Initial Image Positions

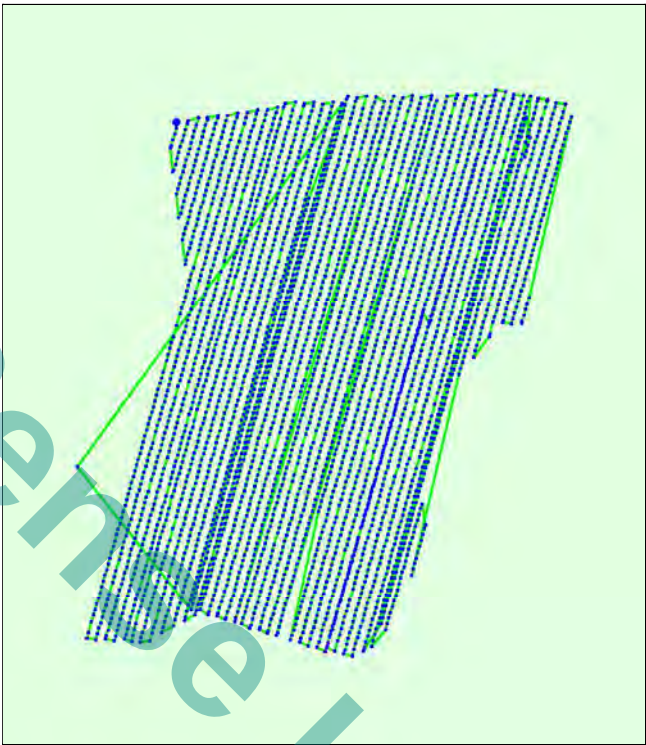


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions





Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane). Red dots indicate disabled or uncalibrated images.

 Overlap

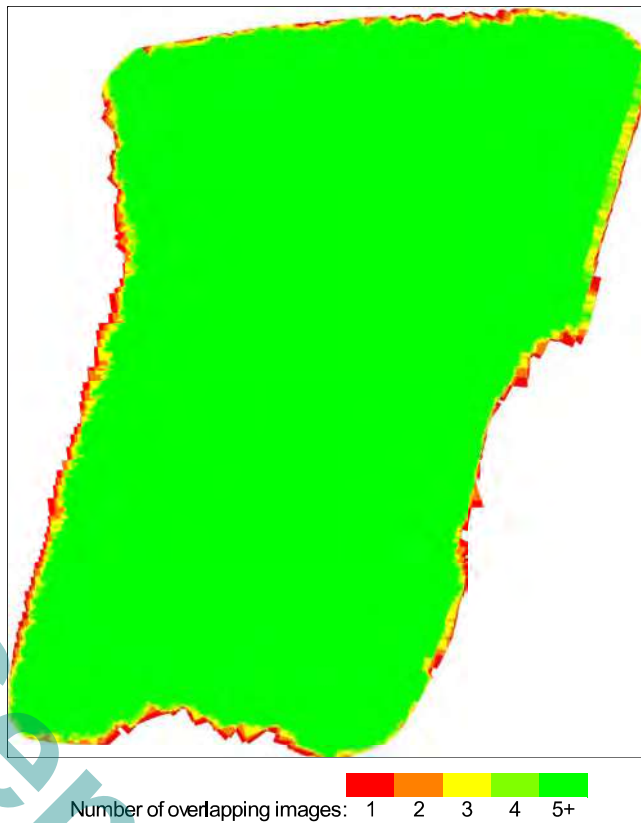


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint matches is also sufficient for these areas (see Figure 5 for keypoint matches).

Bundle Block Adjustment Details

Number of 2D Keypoint Observations for Bundle Block Adjustment	34516739
Number of 3D Points for Bundle Block Adjustment	11411989
Mean Reprojection Error [pixels]	0.160

Internal Camera Parameters

ILCE-QX1_16.0_5456x3632 (RGB). Sensor Dimensions: 23.333 [mm] x 15.533 [mm]

EXIF ID: ILCE-QX1_16.0_5456x3632

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3741.257 [pixel] 16.000 [mm]	2728.000 [pixel] 11.667 [mm]	1816.000 [pixel] 7.766 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	3728.210 [pixel] 15.944 [mm]	2688.027 [pixel] 11.496 [mm]	1793.957 [pixel] 7.672 [mm]	-0.066	0.095	-0.004	-0.002	-0.003

	The number of Automatic Tie Points (ATPs) per pixel, averaged over all images of the camera model, is color coded between black and white. White indicates that, on average, more than 16 ATPs have been extracted at the pixel location. Black indicates that, on average, 0 ATPs have been extracted at the pixel location. Click on the image to see the average direction and magnitude of the re-projection error for each pixel. Note that the vectors are scaled for better visualization.
--	--

2D Keypoints Table

Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
----------------------------------	--

Quality Report



Generated with Pix4Dmapper Pro version 3.2.10 Preview



Important: Click on the different icons for:



Help to analyze the results in the Quality Report



Additional information about the sections



Click [here](#) for additional tips to analyze the Quality Report

Summary



Project	block11_all_3210_sdw_20180505
Processed	2018-05-16 14:05:53
Camera Model Name(s)	UMC-R10C_16.0_5456x3632 (RGB), ILCE-QX1_16.0_5456x3632 (RGB)
Average Ground Sampling Distance (GSD)	10.95 cm / 4.31 in
Area Covered	102.447 km ² / 10244.7 ha / 39.5753 sq. mi. / 25328.2 acres

Quality Check



Images	median of 23237 keypoints per image	
Dataset	5265 out of 5294 images calibrated (99%), all images enabled	
Camera Optimization	0.64% relative difference between initial and optimized internal camera parameters	
Matching	median of 10604 matches per calibrated image	
Georeferencing	yes, 155 GCPs (155 3D), mean RMS error = 0.271 m	



Preview

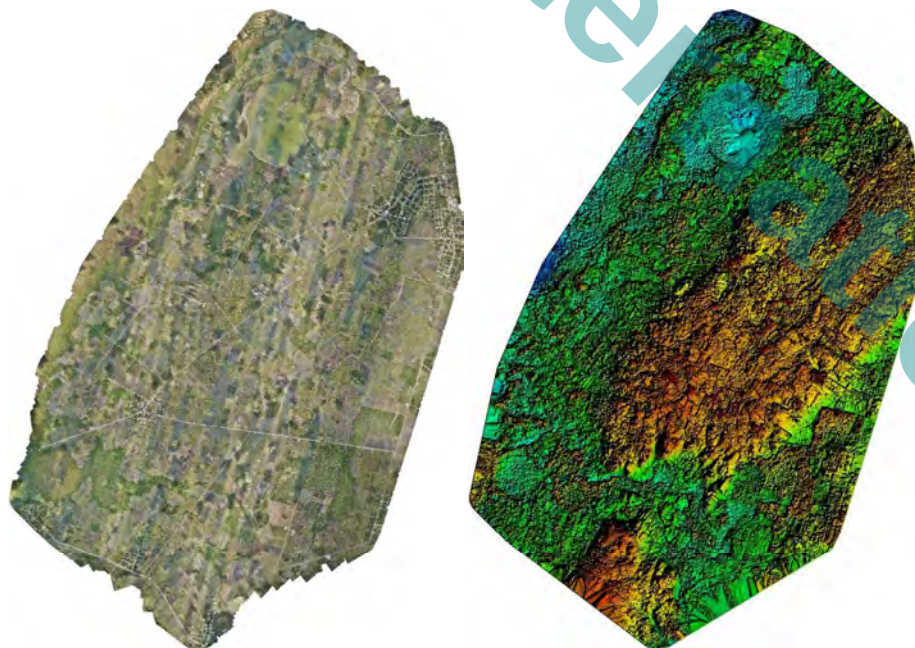


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	5265 out of 5294
Number of Geolocated Images	5294 out of 5294

Initial Image Positions

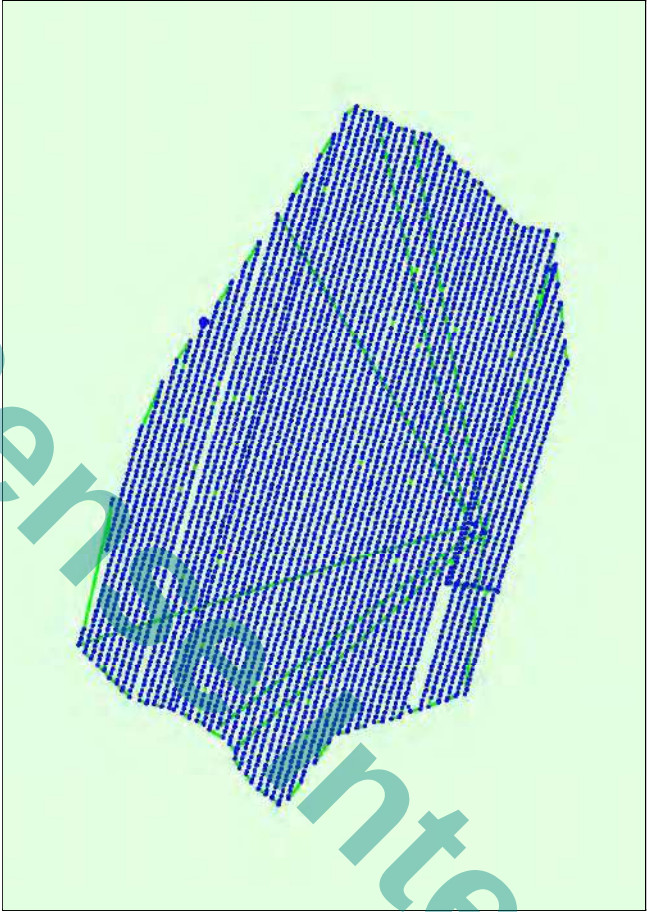


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions



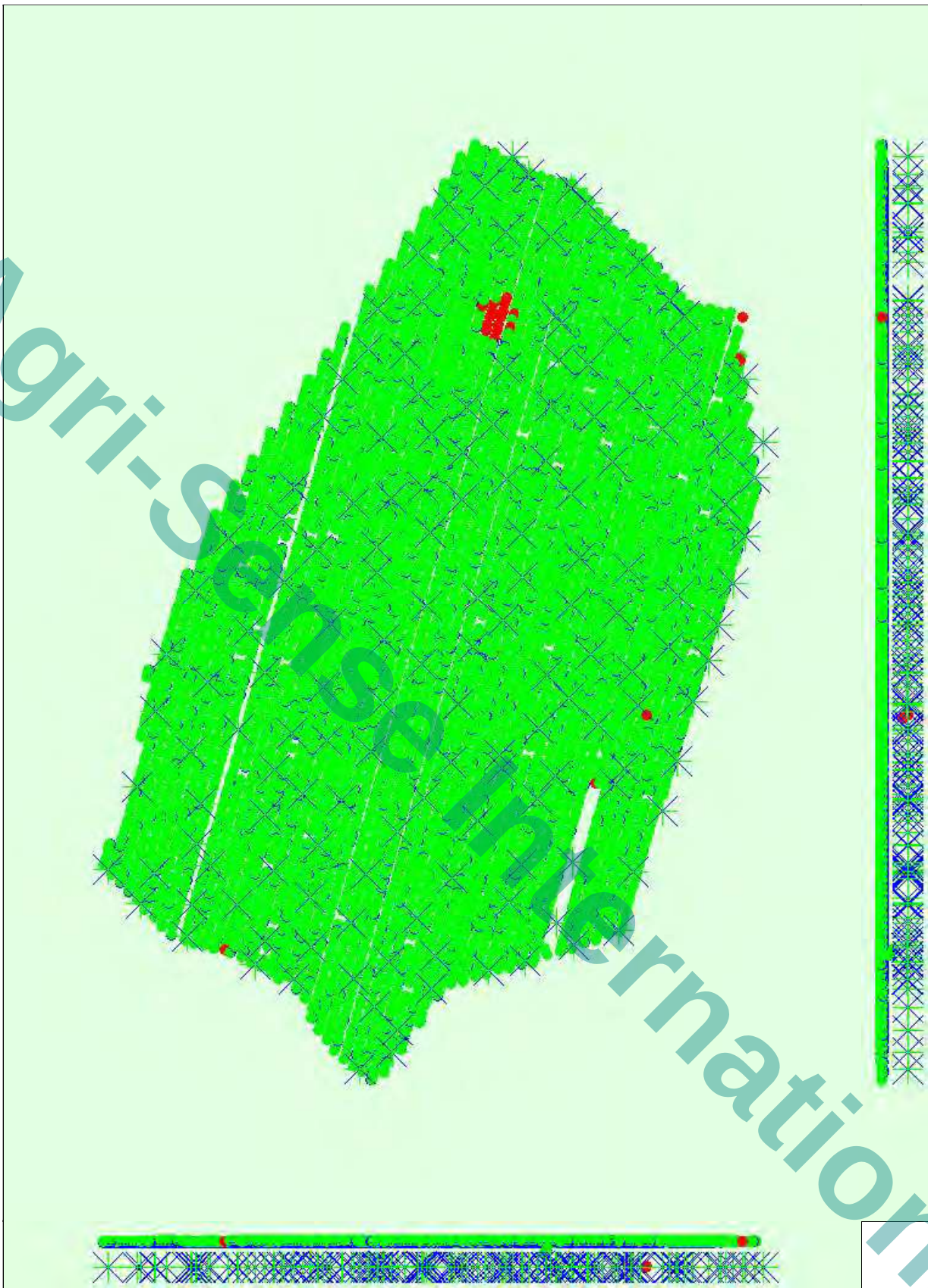


Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane). Red dots indicate disabled or uncalibrated images.

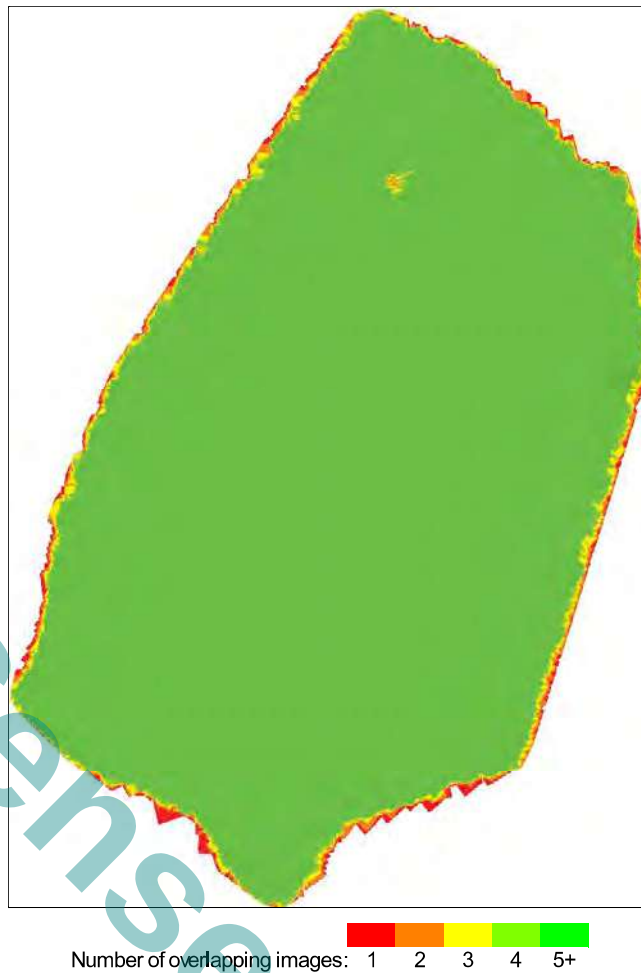


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint matches is also sufficient for these areas (see Figure 5 for keypoint matches).

Bundle Block Adjustment Details

Number of 2D Keypoint Observations for Bundle Block Adjustment	56024284
Number of 3D Points for Bundle Block Adjustment	18347261
Mean Reprojection Error [pixels]	0.159

Internal Camera Parameters

UMC-R10C_16.0_5456x3632 (RGB). Sensor Dimensions: 23.333 [mm] x 15.533 [mm]

EXIF ID: UMC-R10C_16.0_5456x3632

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3741.257 [pixel] 16.000 [mm]	2728.000 [pixel] 11.667 [mm]	1816.000 [pixel] 7.766 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	3732.283 [pixel] 15.962 [mm]	2690.908 [pixel] 11.508 [mm]	1778.618 [pixel] 7.607 [mm]	-0.062	0.092	-0.000	-0.003	-0.000

The number of Automatic Tie Points (ATPs) per pixel, averaged over all images of the camera model, is color coded between black and white. White indicates that, on average, more than 16 ATPs have been extracted at the pixel location. Black indicates that, on average, 0 ATPs have been extracted at the pixel location. Click on the image to see the average direction and magnitude of the re-projection error for each pixel. Note that the vectors are scaled for better visualization.

Quality Report



Generated with Pix4Dmapper Pro version 3.2.10 Preview



Important: Click on the different icons for:



Help to analyze the results in the Quality Report



Additional information about the sections



Click [here](#) for additional tips to analyze the Quality Report

Summary



Project	block12_all_3210_sdw_20180504
Processed	2018-05-11 09:52:22
Camera Model Name(s)	ILCE-QX1_16.0_5456x3632 (RGB)
Average Ground Sampling Distance (GSD)	11.01 cm / 4.33 in
Area Covered	69,8634 km ² / 6986.34 ha / 26,9884 sq. mi. / 17272.5 acres

Quality Check



Images	median of 24289 keypoints per image	
Dataset	3415 out of 3422 images calibrated (99%), all images enabled	
Camera Optimization	0.86% relative difference between initial and optimized internal camera parameters	
Matching	median of 9825 matches per calibrated image	
Georeferencing	yes, 117 GCPs (117 3D), mean RMS error = 0.583 m	



Preview

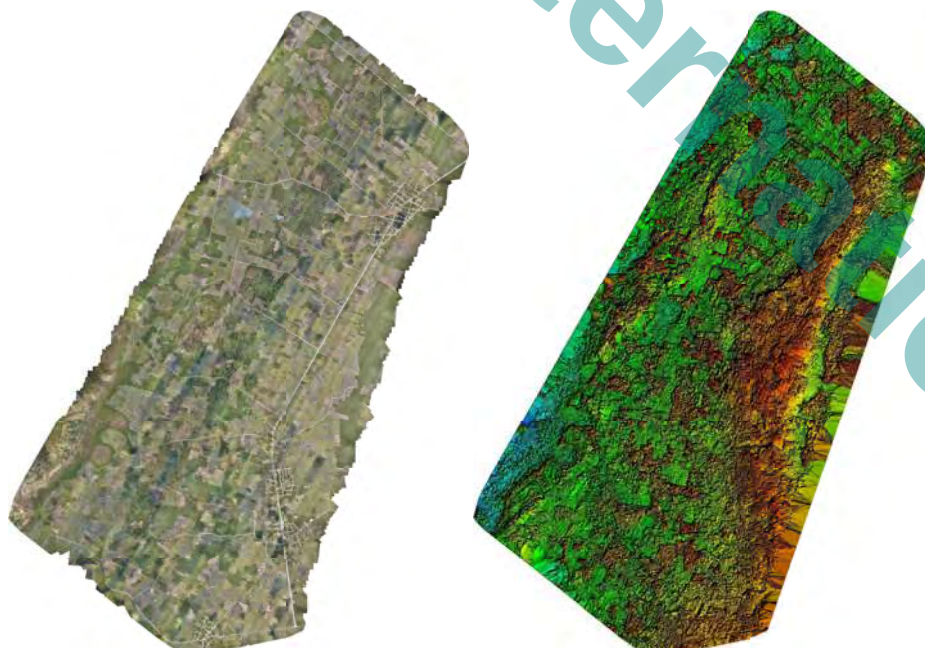


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	3415 out of 3422
Number of Geolocated Images	3422 out of 3422

Initial Image Positions

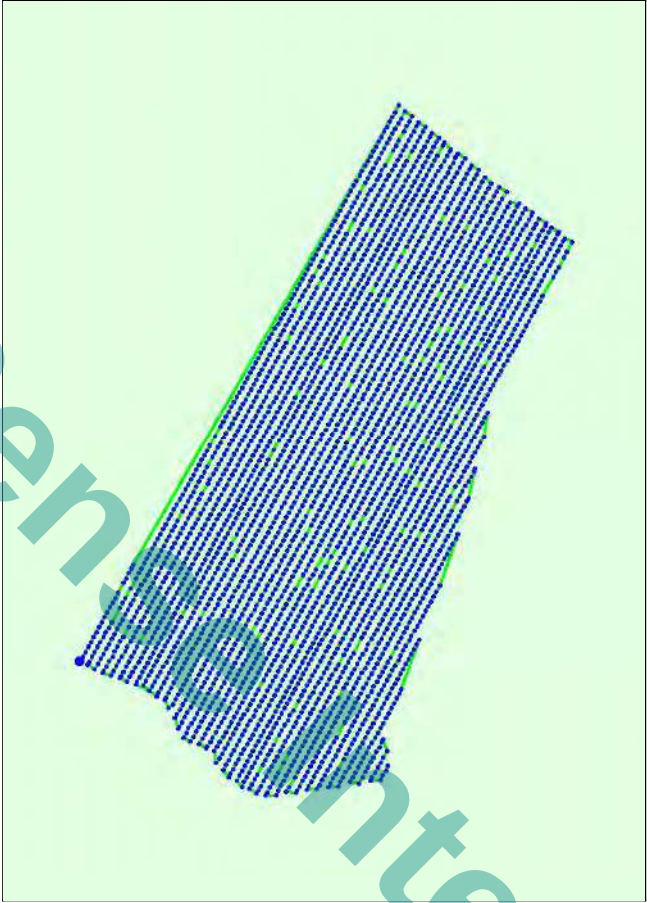


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions



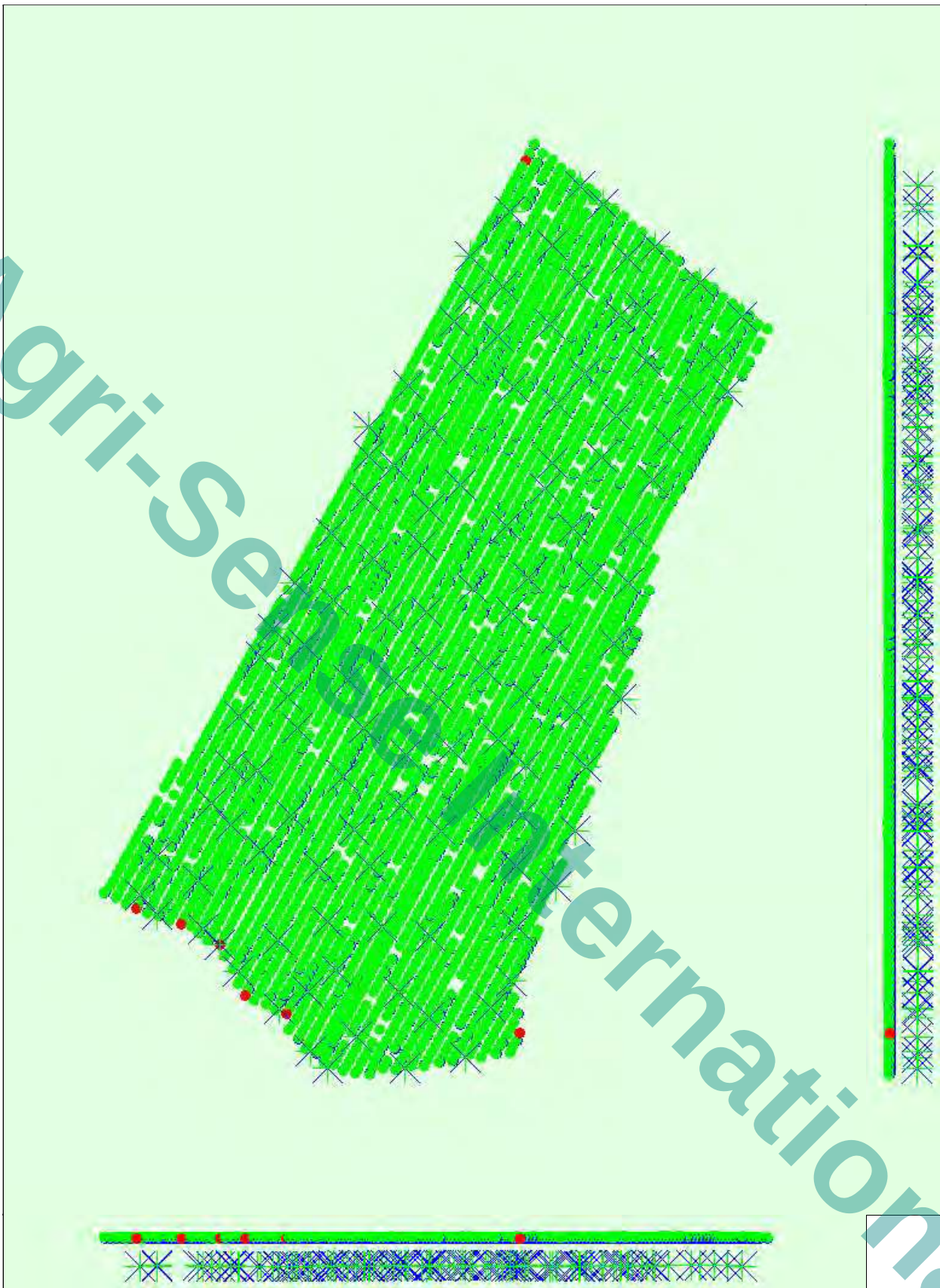


Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane). Red dots indicate disabled or uncalibrated images.

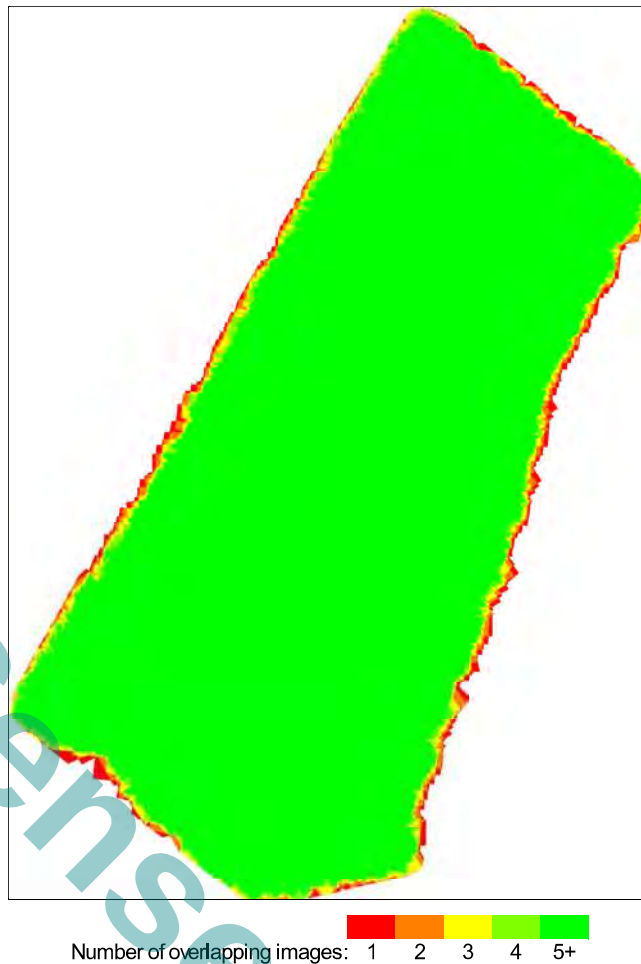


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint matches is also sufficient for these areas (see Figure 5 for keypoint matches).

Bundle Block Adjustment Details

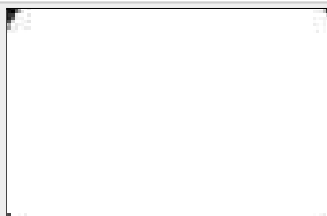
Number of 2D Keypoint Observations for Bundle Block Adjustment	34206400
Number of 3D Points for Bundle Block Adjustment	11236256
Mean Reprojection Error [pixels]	0.155

Internal Camera Parameters

ILCE-QX1_16.0_5456x3632 (RGB). Sensor Dimensions: 23.333 [mm] x 15.533 [mm]

EXIF ID: ILCE-QX1_16.0_5456x3632

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3741.257 [pixel] 16.000 [mm]	2728.000 [pixel] 11.667 [mm]	1816.000 [pixel] 7.766 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	3708.985 [pixel] 15.862 [mm]	2685.507 [pixel] 11.485 [mm]	1786.299 [pixel] 7.639 [mm]	-0.067	0.099	-0.011	-0.002	-0.003



The number of Automatic Tie Points (ATPs) per pixel, averaged over all images of the camera model, is color coded between black and white. White indicates that, on average, more than 16 ATPs have been extracted at the pixel location. Black indicates that, on average, 0 ATPs have been extracted at the pixel location. Click on the image to see the average direction and magnitude of the reprojection error for each pixel. Note that the vectors are scaled for better visualization.

Quality Report



Generated with Pix4Dmapper Pro version 3.2.10 Preview



Important: Click on the different icons for:



Help to analyze the results in the Quality Report



Additional information about the sections



Click [here](#) for additional tips to analyze the Quality Report

Summary



Project	block13_all_3210_sdw_20180504
Processed	2018-05-25 16:55:51
Camera Model Name(s)	ILCE-QX1_16.0_5456x3632 (RGB)
Average Ground Sampling Distance (GSD)	11,18 cm / 4.4 in
Area Covered	81,1897 km ² / 8118,97 ha / 31,3637 sq. mi. / 20072,8 acres

Quality Check



Images	median of 27112 keypoints per image	
Dataset	3991 out of 4030 images calibrated (99%), all images enabled, 2 blocks	
Camera Optimization	0.17% relative difference between initial and optimized internal camera parameters	
Matching	median of 9550.84 matches per calibrated image	
Georeferencing	yes, 112 GCPs (112 3D), mean RMS error = 0,513 m	

Preview

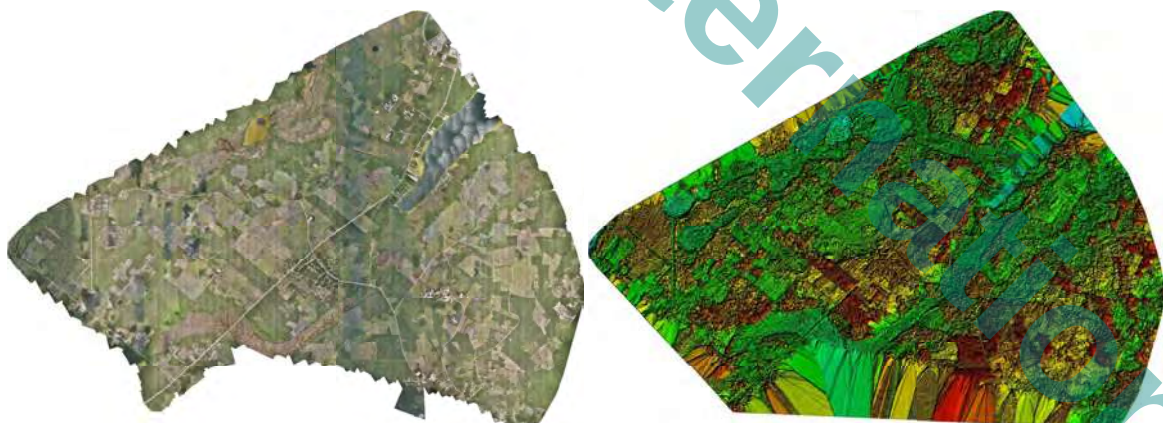


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details



Number of Calibrated Images	3991 out of 4030
Number of Geolocated Images	4030 out of 4030

Initial Image Positions

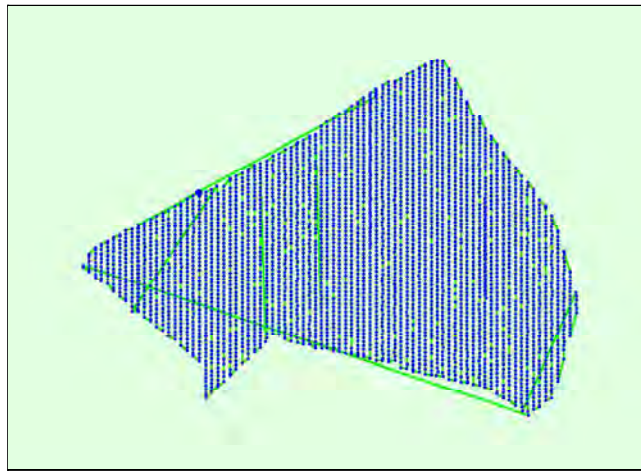


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions

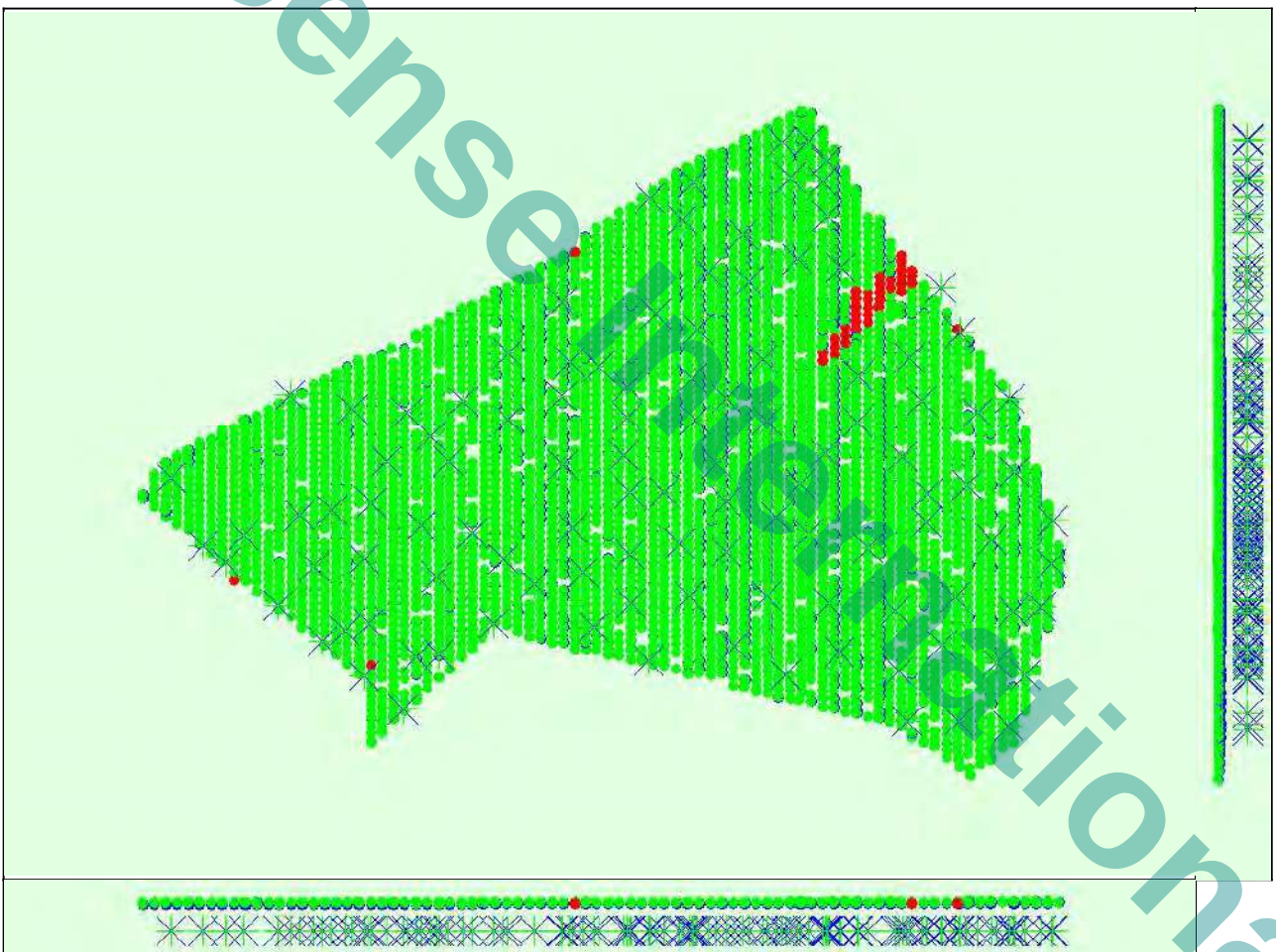


Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane). Red dots indicate disabled or uncalibrated images.

Overlap

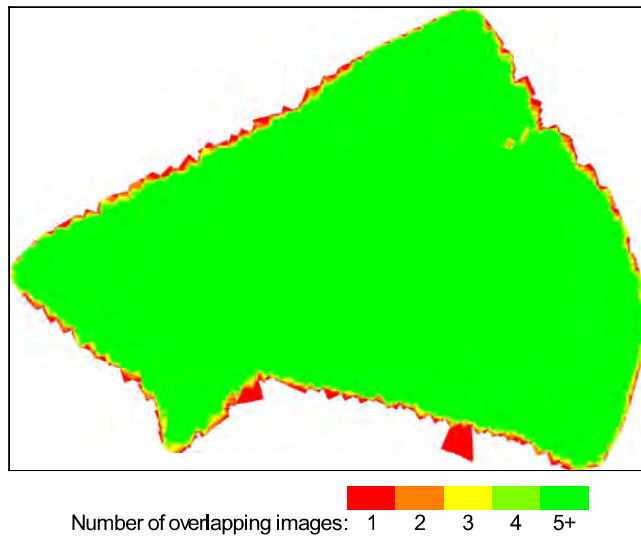


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint matches is also sufficient for these areas (see Figure 5 for keypoint matches).

Bundle Block Adjustment Details

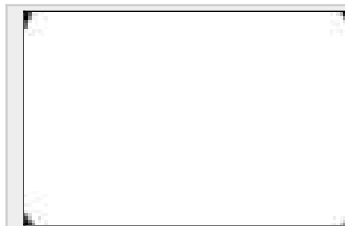
Number of 2D Keypoint Observations for Bundle Block Adjustment	39665325
Number of 3D Points for Bundle Block Adjustment	13201032
Mean Reprojection Error [pixels]	0.163

Internal Camera Parameters

ILCE-QX1_16.0_5456x3632 (RGB). Sensor Dimensions: 23.333 [mm] x 15.533 [mm]

EXIF ID: ILCE-QX1_16.0_5456x3632

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3741.257 [pixel] 16.000 [mm]	2728.000 [pixel] 11.667 [mm]	1816.000 [pixel] 7.766 [mm]	0.000	0.000	0.000	0.000	0.000
Optimized Values	3734.894 [pixel] 15.973 [mm]	2687.251 [pixel] 11.492 [mm]	1789.021 [pixel] 7.651 [mm]	-0.068	0.102	-0.013	-0.002	-0.003



The number of Automatic Tie Points (ATPs) per pixel, averaged over all images of the camera model, is color coded between black and white. White indicates that, on average, more than 16 ATPs have been extracted at the pixel location. Black indicates that, on average, 0 ATPs have been extracted at the pixel location. Click on the image to see the average direction and magnitude of the re-projection error for each pixel. Note that the vectors are scaled for better visualization.

2D Keypoints Table

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	27112	9551
Min	9620	92
Max	46773	31108
Mean	27325	9939

3D Points from 2D Keypoint Matches

Number of 3D Points Observed

In 2 Images	8437457
In 3 Images	2050391
In 4 Images	951544
In 5 Images	539500
In 6 Images	343638
In 7 Images	239015
In 8 Images	174533
In 9 Images	135305
In 10 Images	108367
In 11 Images	85317
In 12 Images	61209
In 13 Images	39695
In 14 Images	20588
In 15 Images	8734
In 16 Images	3664
In 17 Images	1490
In 18 Images	440
In 19 Images	103
In 20 Images	35
In 21 Images	7

2D Keypoint Matches

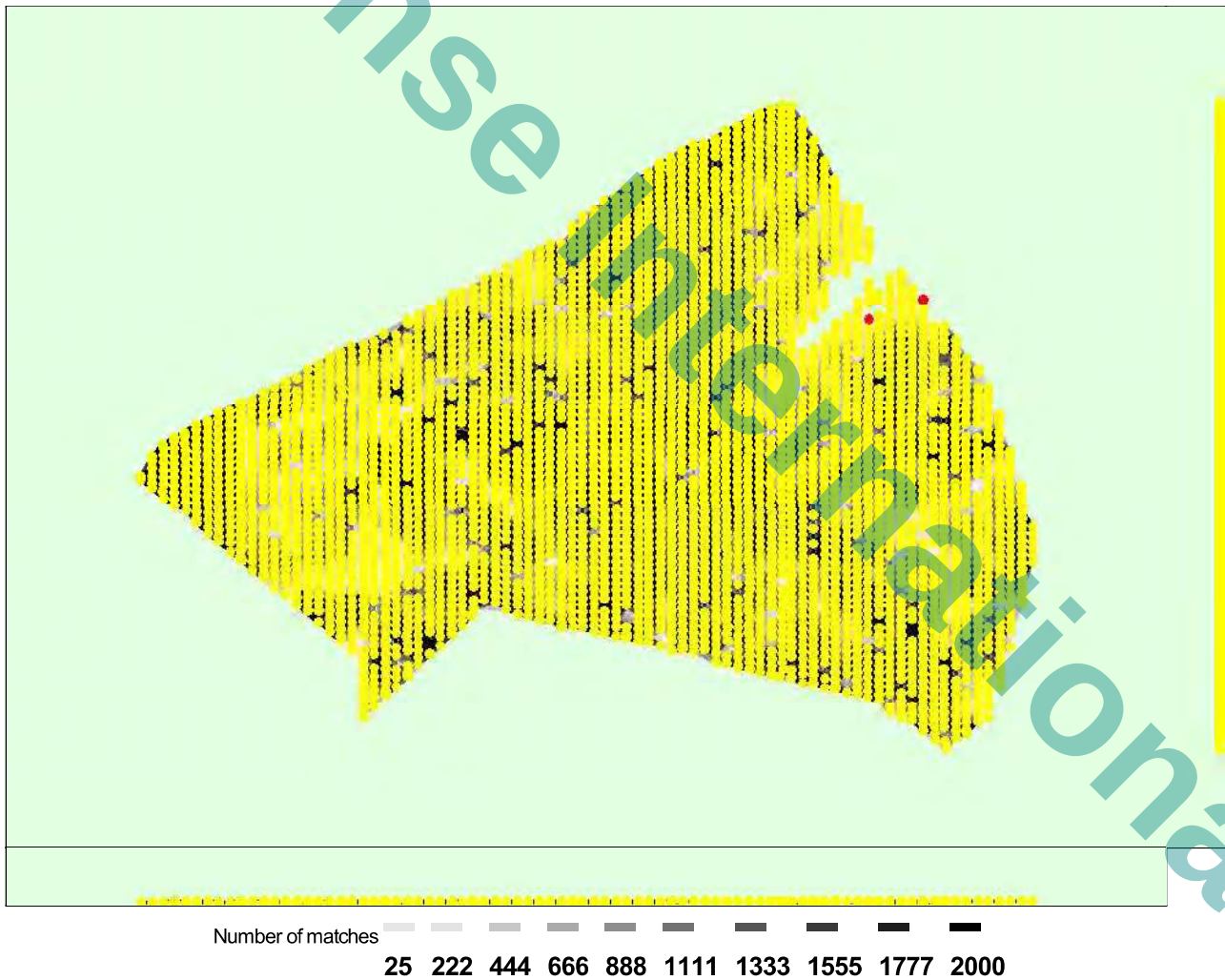


Figure 5: Computed image positions with links between matched images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images.

	Block Number							
	1.1	1.2	2	2-corner-rerun	3	4	5	6
Kepoints-Per-Image	86914.0	87621.0	85478.0	22764.0	85932.0	85460.0	27601.0	30586.0
Calibrated Images	3735.0	3161.0	5881.0	1177.0	4170.0	3707.0	5180.0	2823.0
Total Images	3759.0	3224.0	6047.0	1180.0	4224.0	3715.0	5195.0	2858.0
Camera Optimization	1.3	0.4	0.9	6.7	0.2	7.0	3.9	6.4
Matching	25770.5	26581.5	23221.0	10328.2	19258.7	23911.6	8475.1	8222.7
Georeferencing	0.2	0.1	5.1	0.9	0.3	0.7	0.5	0.2
GSD	10.3	10.3	10.0	9.0	10.1	10.1	10.7	10.0
Area (Ha)	6224.0	5456.9	10052.3	1689.2	7758.3	6276.4	9032.1	5030.7
	Block Number							
	7	8	9	10	11	12	13	Average
Kepoints-Per-Image	30281.0	86200.0	28999.0	22043.0	23237.0	24289.0	27112.0	<u>50301.1</u>
Calibrated Images	3303.0	4359.0	6510.0	3564.0	5265.0	3415.0	3991.0	<u>4016.1</u>
Total Images	3325.0	4477.0	6557.0	3575.0	5294.0	3422.0	4030.0	<u>4058.8</u>
Camera Optimization	0.5	2.2	0.3	0.3	0.6	0.9	0.2	<u>2.1</u>
Matching	10271.5	17700.2	9130.2	9613.8	10604.0	9825.0	9550.8	<u>14831.0</u>
Georeferencing	0.0	0.2	0.4	0.1	0.3	0.6	0.5	<u>0.7</u>
GSD	10.1	10.0	11.1	10.8	11.0	11.0	11.2	<u>10.3</u>
Area (Ha)	6320.0	5861.6	12146.7	6552.7	10244.7	6986.3	8119.0	<u>7183.4</u>

Appendix 5

Explanation of Terms

Average Ground Sampling Distance; this parameter defines the average pixel size of the map to be produced, in this case the average pixel size of the final map was 10.3 cm.

Image Coordinate System, is a parameter which describes what coordinate system was used by the UAV while it was collecting images during survey. The UAV uses the standard and internationally accepted World Geodetic Standard 1984 geographic datum (WGS84) to position the photographs it takes.

Output Coordinate System, is the coordinate system in which the final map and Digital Surface Model (DSM) will be exported from the program. In this instance, the outputs were modelled on the Universal Transverse Mercator Coordinate system centred on 16N Zone, while being based on the WGS84 Datum.

Images – Keypoints per Image; this parameter describes the average number of definable keypoints in each image, that can be compared to keypoints in surrounding images. This process is done so that matching keypoints in images may be found and the program may generate the map to a high degree of accuracy. A value of 10000 or more is required.

Dataset – images Calibration; this parameter defines the percentage of images processed that are enabled. Above 90% indicates good calibration and that the images are all of good quality. Where the image matching is less than 90%, some of the images were too blurry to process and so have been disabled so that they will not affect the final orthomosaic image or DSM quality. The Matching Quality Parameter describes the quality of the remaining enabled image.

Camera Optimisation; For this parameter, any value over 5% suggests that there were problems with the camera while it was taking photos, as the focal length for each image is far from optimal. For values less than 5% the camera lens functions were within optimal levels.

Matching; this parameter describes how many keypoints could, on average, be matched for each of the enabled and calibrated images. Any value greater than 1000 shows that strong matching and that the images themselves are of sufficiently high quality to generate an accurate map.

Geo-referencing; This parameter defines whether the average error in the map is less than the Ground Sampling Distance, so the results show the average error in the X, Y and Z directions. The value displayed as the mean error is the difference between the images and the ground control points (GCP) that was corrected during processing. A lower value shows better matching between the Images and the GCP's. If there were an error or some inaccuracy with the images or GCP's then the processing report would show a red cross instead of a green tick with this parameter.

Appendix 6

List of Quality control
checks on the GCPs

Total number of points	1523
Mean RMSE Error (cm)	2.73
Standard Deviation (cm)	4.56

X	Y	LABEL	Model Elevation	GCP-elev	Error	Error^2	SqrtError
334228.98	1997530.09	BASE 1 Final	8.944	8.944	0.000	0.000	0.000
340481.60	2015723.40	BASE 2 FINAL	3.576	3.645	-0.069	0.005	0.069
324715.98	1991825.91	base 3 day 6	38.197	38.192	0.005	0.000	0.005
337629.85	2016195.81	Base 4	3.920	3.914	0.006	0.000	0.006
344286.61	2035197.46	blz b5 d23	11.069	11.085	-0.016	0.000	0.016
333777.32	2019479.04	dg b10 104	13.787	13.744	0.043	0.002	0.043
333395.44	2018637.67	dg b10 105	12.216	12.207	0.009	0.000	0.009
332791.59	2018329.34	dg b10 106	2.310	2.301	0.009	0.000	0.009
334452.63	2019319.83	dg b10 106.1	15.147	15.161	-0.014	0.000	0.014
335097.38	2019242.98	dg b10 106.2	13.417	13.407	0.010	0.000	0.010
335716.53	2019142.31	dg b10 106.3	13.312	13.306	0.006	0.000	0.006
333214.89	2019591.65	dg b10 107	10.368	10.378	-0.010	0.000	0.010
335293.26	2018590.27	dg b10 108	7.162	7.157	0.005	0.000	0.005
334887.68	2018052.47	dg b10 109	2.345	2.346	-0.001	0.000	0.001
334384.96	2017380.62	dg b10 110	3.732	3.737	-0.005	0.000	0.005
333643.99	2017854.21	dg b10 111	0.918	0.907	0.011	0.000	0.011
335195.26	2016693.47	dg b10 112	2.612	2.615	-0.003	0.000	0.003
332933.28	2017449.74	dg b10 113	1.915	1.896	0.019	0.000	0.019
333511.78	2017030.35	dg b10 114	6.635	6.606	0.029	0.001	0.029
333528.02	2016240.18	dg b10 115	15.943	15.941	0.002	0.000	0.002
332799.77	2016337.63	dg b10 116	7.063	7.092	-0.029	0.001	0.029
331654.25	2016909.10	dg b10 117	2.535	2.536	-0.001	0.000	0.001
331723.99	2017864.79	dg b10 118	0.926	0.925	0.001	0.000	0.001
331937.32	2017529.23	dg b10 119	1.189	1.189	0.000	0.000	0.000
332370.27	2016912.38	dg b10 120	3.400	3.397	0.003	0.000	0.003
338296.58	2018792.86	dg b10 71	5.922	5.922	0.000	0.000	0.000
331631.75	2019314.77	dg b10 83	0.826	0.834	-0.008	0.000	0.008
330797.88	2018757.61	dg b10 84	1.272	1.268	0.004	0.000	0.004
331780.95	2018492.07	dg b10 85	1.562	1.567	-0.005	0.000	0.005
332372.66	2019662.87	dg b10 86	2.271	2.273	-0.002	0.000	0.002
332959.26	2019021.79	dg b10 87	3.484	3.484	0.000	0.000	0.000
348861.93	2014341.42	dg b7 100	12.979	12.976	0.003	0.000	0.003
349193.77	2013921.13	dg b7 101	12.700	12.706	-0.006	0.000	0.006
348492.23	2012947.82	dg b7 102	6.213	6.210	0.003	0.000	0.003
347607.62	2013118.70	dg b7 103	10.875	10.898	-0.023	0.001	0.023
347756.77	2012699.63	dg b7 105	8.880	8.884	-0.004	0.000	0.004
347757.69	2012694.92	dg b7 106	8.960	9.008	-0.048	0.002	0.048
347759.94	2012689.84	dg b7 107	8.923	8.927	-0.004	0.000	0.004
347764.52	2012681.92	dg b7 108	7.339	7.252	0.087	0.008	0.087
347758.68	2012568.21	dg b7 109	9.149	9.155	-0.006	0.000	0.006
349827.35	2014454.16	dg b7 33	4.176	4.175	0.001	0.000	0.001
350230.93	2015361.58	dg b7 35	9.996	9.960	0.036	0.001	0.036
349364.17	2015712.66	dg b7 36	11.760	11.764	-0.004	0.000	0.004
349447.21	2014908.12	dg b7 37	11.926	11.938	-0.012	0.000	0.012

349022.14	2013057.64	dg b7 47	11.752	11.767	-0.015	0.000	0.015
348363.97	2012343.68	dg b7 48	8.660	8.645	0.015	0.000	0.015
348214.47	2017550.48	dg b7 53	1.591	1.503	0.088	0.008	0.088
349346.50	2017121.65	dg b7 54	10.926	10.920	0.006	0.000	0.006
349604.38	2017446.91	dg b7 55	9.456	9.473	-0.017	0.000	0.017
353154.64	2018325.45	dg b7 56	7.670	7.668	0.002	0.000	0.002
352765.33	2018696.11	dg b7 57	10.132	10.131	0.001	0.000	0.001
351041.71	2018115.22	dg b7 58	12.059	12.057	0.002	0.000	0.002
350902.05	2018718.50	dg b7 59	10.050	10.047	0.003	0.000	0.003
352659.78	2017758.88	dg b7 60	10.268	10.268	0.000	0.000	0.000
352347.56	2018232.08	dg b7 61	7.003	7.021	-0.018	0.000	0.018
351576.17	2018602.07	dg b7 62	4.066	4.066	0.000	0.000	0.000
352111.86	2017456.20	dg b7 62.1	8.416	8.375	0.041	0.002	0.041
351199.25	2017465.41	dg b7 62.2	10.699	10.699	0.000	0.000	0.000
350274.39	2017922.12	dg b7 63	8.794	8.727	0.067	0.004	0.067
349718.75	2018456.22	dg b7 64	1.672	1.685	-0.013	0.000	0.013
350609.92	2019356.73	dg b7 65	4.153	4.209	-0.056	0.003	0.056
350617.83	2020147.18	dg b7 66	2.913	2.917	-0.004	0.000	0.004
350949.04	2021265.42	dg b7 67	2.096	2.096	0.000	0.000	0.000
348880.60	2017791.36	dg b7 68	1.709	1.690	0.019	0.000	0.019
350123.65	2017023.31	dg b7 69	11.924	11.896	0.028	0.001	0.028
350780.23	2016609.24	dg b7 70	10.927	10.905	0.022	0.000	0.022
344482.87	2009392.14	dg b7 71	12.026	11.977	0.049	0.002	0.049
344482.87	2016322.35	dg b7 72	1.242	1.242	0.000	0.000	0.000
351244.54	2019685.93	dg b7 72.1	7.854	7.973	-0.119	0.014	0.119
352659.47	2019095.29	dg b7 72.2	7.560	7.591	-0.031	0.001	0.031
352381.54	2020039.54	dg b7 72.3	3.326	3.306	0.020	0.000	0.020
352068.12	2020589.52	dg b7 72.4	2.944	2.856	0.088	0.008	0.088
351525.81	2019849.39	dg b7 72.5	5.127	5.135	-0.008	0.000	0.008
351228.78	2020376.86	dg b7 72.6	3.430	3.426	0.004	0.000	0.004
351079.39	2020244.31	dg b7 72.7	1.330	1.358	-0.028	0.001	0.028
350375.63	2015939.37	dg b7 72.8	6.680	6.680	0.000	0.000	0.000
350593.51	2016774.84	dg b7 73	3.046	3.046	0.000	0.000	0.000
351471.29	2019433.19	dg b7 74	12.268	12.285	-0.017	0.000	0.017
353126.43	2016611.42	dg b7 75	12.661	12.667	-0.006	0.000	0.006
349846.52	2016361.50	dg b7 76	11.944	11.919	0.025	0.001	0.025
348989.78	2016855.43	dg b7 77	4.289	4.280	0.009	0.000	0.009
348420.24	2016126.17	dg b7 78	6.348	6.373	-0.025	0.001	0.025
348172.42	2015423.61	dg b7 79	10.771	10.729	0.042	0.002	0.042
348340.33	2014653.37	dg b7 80	5.281	5.266	0.015	0.000	0.015
347170.36	2019806.89	dg b7 81	2.317	2.311	0.006	0.000	0.006
353968.92	2020924.52	dg b7 82	4.487	4.444	0.043	0.002	0.043
353773.51	2020475.02	dg b7 83	4.684	4.684	0.000	0.000	0.000
353836.14	2020398.88	dg b7 84	10.228	10.201	0.027	0.001	0.027
353289.33	2021872.40	dg b7 85	1.202	1.208	-0.006	0.000	0.006
350229.58	2021947.83	dg b7 86	4.709	4.727	-0.018	0.000	0.018
351476.00	2022510.55	dg b7 87	5.544	5.544	0.000	0.000	0.000
351736.55	2021632.03	dg b7 88	3.287	3.288	-0.001	0.000	0.001
352032.24	2022295.24	dg b7 89	1.559	1.563	-0.004	0.000	0.004
350633.46	2021306.40	dg b7 90	1.413	1.407	0.006	0.000	0.006

350286.13	2020971.06	dg b7 91	1.461	1.435	0.026	0.001	0.026
350095.96	2019154.88	dg b7 92	2.591	2.580	0.011	0.000	0.011
353545.01	2020814.98	dg b7 93	2.422	2.425	-0.003	0.000	0.003
352860.25	2020861.28	dg b7 94	9.873	9.871	0.002	0.000	0.002
353396.91	2014978.04	dg b7 95	1.929	1.912	0.017	0.000	0.017
347124.58	2015098.67	dg b7 96	4.705	4.732	-0.027	0.001	0.027
347707.45	2015944.71	dg b7 97	1.181	1.187	-0.006	0.000	0.006
347210.99	2013680.61	dg b7 98	8.558	8.558	0.000	0.000	0.000
348174.33	2014039.72	dg b7 99	8.547	8.543	0.004	0.000	0.004
348509.17	2011973.60	dg b9 19	11.985	11.940	0.045	0.002	0.045
346134.51	2012278.21	dg b9 20	10.800	10.757	0.043	0.002	0.043
346880.67	2011548.58	dg b9 21	10.757	10.740	0.017	0.000	0.017
346859.74	2012553.49	dg b9 22	12.596	12.605	-0.009	0.000	0.009
346196.75	2012853.28	dg b9 23	3.602	3.605	-0.003	0.000	0.003
345398.80	2013156.16	dg b9 24	8.418	8.425	-0.007	0.000	0.007
346577.85	2013704.61	dg b9 25	3.763	3.766	-0.003	0.000	0.003
346165.04	2013702.43	dg b9 25.1	3.873	3.878	-0.005	0.000	0.005
346569.03	2010464.00	dg b9 26	11.521	11.504	0.017	0.000	0.017
346805.07	2011100.37	dg b9 27	11.201	11.203	-0.002	0.000	0.002
345625.11	2024169.48	dg b9 27.1	11.474	11.474	0.000	0.000	0.000
339946.48	2023210.83	dg b9 27.2	11.410	11.398	0.012	0.000	0.012
340031.57	2010689.55	dg b9 28	10.812	10.820	-0.008	0.000	0.008
345095.23	2024948.23	dg b9 28.2	12.548	12.535	0.013	0.000	0.013
339422.77	2009621.90	dg b9 29	14.463	14.421	0.042	0.002	0.042
344829.01	2009223.84	dg b9 30	14.710	14.695	0.015	0.000	0.015
344829.01	2007699.58	dg b9 31	14.834	14.836	-0.002	0.000	0.002
345425.68	2008269.19	dg b9 32	11.292	11.294	-0.002	0.000	0.002
346399.69	2011079.11	dg b9 54.1	11.647	11.650	-0.003	0.000	0.003
346023.45	2011566.85	dg b9 54.2	11.500	11.507	-0.007	0.000	0.007
347177.36	2022786.52	dg b9 62	12.863	12.846	0.017	0.000	0.017
346178.93	2022190.64	dg b9 63	13.834	13.841	-0.007	0.000	0.007
339331.74	2022981.78	dg b9 64	11.437	11.440	-0.003	0.000	0.003
338512.33	2021771.97	dg b9 65	13.665	13.656	0.009	0.000	0.009
338598.96	2007669.71	dg b9 70	14.762	14.763	-0.001	0.000	0.001
339296.22	2008583.44	dg b9 71	13.366	13.348	0.018	0.000	0.018
345625.99	2008862.41	dg b9 72	13.607	13.587	0.020	0.000	0.020
345147.67	2010132.38	dg b9 73	12.545	12.549	-0.004	0.000	0.004
344468.34	2010988.07	dg b9 74	11.845	11.841	0.004	0.000	0.004
344621.70	2009896.77	dg b9 75	2.537	2.516	0.021	0.000	0.021
344599.26	2009693.67	dg b9 76	9.591	9.608	-0.017	0.000	0.017
343253.48	2009267.47	dg b9 77	4.704	4.713	-0.009	0.000	0.009
343810.71	2008812.15	dg b9 78	11.241	11.241	0.000	0.000	0.000
343159.11	2021615.98	dg b9 94	12.666	12.657	0.009	0.000	0.009
343664.68	2021482.57	dg b9 95	12.413	12.407	0.006	0.000	0.006
343664.68	2020841.13	dg b9 96	13.635	13.619	0.016	0.000	0.016
337616.19	2020510.86	dg b9 97	14.981	14.982	-0.001	0.000	0.001
338327.22	2020154.32	dg b9 98.1	15.606	15.601	0.005	0.000	0.005
337905.81	2019736.59	dg b9 98.2	8.493	8.490	0.003	0.000	0.003
337219.73	2018923.76	dg b9 98.3	5.904	5.894	0.010	0.000	0.010
337565.26	2017311.96	dg GCP b7 102.2	4.203	4.198	0.005	0.000	0.005

338037.30	2017318.54	dg GCP b7 1033	3.734	3.734	0.000	0.000	0.000
337359.34	2018298.73	dg GCP b7 104	6.135	6.123	0.012	0.000	0.012
343165.20	2019207.01	dg GCP b7 106	9.334	9.362	-0.028	0.001	0.028
341573.65	2018919.84	dg GCP b7 107	2.077	2.055	0.022	0.000	0.022
341573.65	2019949.08	dg GCP b7 108	10.213	10.189	0.024	0.001	0.024
342053.57	2020801.33	dg GCP b7 110	1.218	1.178	0.040	0.002	0.040
343457.47	2020483.72	dg GCP b7 116	1.030	1.048	-0.018	0.000	0.018
343890.63	2018669.73	dg GCP b7 117	0.973	0.981	-0.008	0.000	0.008
343914.20	2018137.40	dg GCP b7 118	1.384	1.363	0.021	0.000	0.021
345567.12	2017603.28	dg GCP b7 119	1.071	1.085	-0.014	0.000	0.014
346248.95	2026229.63	dg GCP b7 25	1.315	1.307	0.008	0.000	0.008
346278.04	2025355.30	dg GCP b7 26	1.195	1.194	0.001	0.000	0.001
345416.28	2020098.75	dg GCP b7 57.2	4.067	4.051	0.016	0.000	0.016
345521.19	2019937.02	dg GCP b7 57.3	5.403	5.411	-0.008	0.000	0.008
347203.37	2020818.26	dg GCP b7 57.4	3.126	3.139	-0.013	0.000	0.013
347062.43	2020597.58	dg GCP b7 57.5	5.014	5.034	-0.020	0.000	0.020
341772.43	2018370.32	dg GCP b7 61	9.990	9.993	-0.003	0.000	0.003
342342.12	2012685.06	dg GCP b7 78	1.264	1.198	0.066	0.004	0.066
341869.54	2011368.44	dg GCP b7 88	2.254	2.248	0.006	0.000	0.006
342786.90	2011585.23	dg GCP b7 90	1.432	1.431	0.001	0.000	0.001
340797.82	2008429.09	DG-1	9.987	9.951	0.036	0.001	0.036
339754.23	2009903.53	DG-10	12.137	12.127	0.010	0.000	0.010
340495.93	2014116.77	DG-100	0.000	0.196	-0.196	0.038	0.196
341246.54	2014118.15	DG-101	0.000	0.150	-0.150	0.023	0.150
332840.04	2017573.14	DG-102	0.000	0.281	-0.281	0.079	0.281
331613.45	2016769.26	DG-102.1	5.860	5.859	0.001	0.000	0.001
343522.85	2017573.33	DG-103	0.000	0.284	-0.284	0.081	0.284
343521.62	1998739.82	DG-104.1	32.943	32.952	-0.009	0.000	0.009
346349.47	1998990.17	DG-104.2	25.271	25.313	-0.042	0.002	0.042
342822.94	2024107.16	DG-105	0.100	0.412	-0.312	0.097	0.312
342822.94	1999755.37	DG-106	27.591	27.609	-0.018	0.000	0.018
346349.29	2025310.01	DG-107	0.346	0.346	0.000	0.000	0.000
325588.29	2016933.68	DG-11	7.992	8.014	-0.022	0.000	0.022
326238.57	2016036.79	DG-11.1	3.965	3.994	-0.029	0.001	0.029
346432.96	2000707.97	DG-112	17.941	17.913	0.028	0.001	0.028
325878.66	2001078.38	DG-113	15.835	15.861	-0.026	0.001	0.026
347611.04	1999307.14	DG-118	25.808	25.804	0.004	0.000	0.004
347611.14	1999555.04	DG-119.2	15.428	15.424	0.004	0.000	0.004
338989.68	2017429.70	DG-13	7.075	7.075	0.000	0.000	0.000
338989.68	2016514.16	DG-15	8.313	8.175	0.138	0.019	0.138
338989.68	2016281.44	DG-16	5.265	5.297	-0.032	0.001	0.032
336884.13	2016857.89	DG-2	4.238	4.347	-0.109	0.012	0.109
336884.13	2002045.23	DG-23	26.509	26.632	-0.123	0.015	0.123
324926.05	2002818.06	DG-24	22.844	22.998	-0.154	0.024	0.154
326318.14	2010739.84	DG-241	15.169	15.170	-0.001	0.000	0.001
326318.14	2004092.35	DG-25	15.432	15.541	-0.109	0.012	0.109
327552.17	2010771.98	DG-254	6.514	6.499	0.015	0.000	0.015
326532.06	2011883.11	DG-26	15.574	15.583	-0.009	0.000	0.009
338579.14	2009311.92	DG-27	12.967	12.955	0.012	0.000	0.012
338579.14	2010198.44	DG-29	16.522	16.479	0.043	0.002	0.043

338349.40	2017425.85	DG-3	5.361	5.377	-0.016	0.000	0.016
338349.40	2011248.17	DG-30	15.114	15.133	-0.019	0.000	0.019
337643.15	2004854.67	DG-31	18.282	18.396	-0.114	0.013	0.114
337643.15	2008701.59	DG-32	12.050	12.124	-0.074	0.005	0.074
339635.23	2014421.04	DG-34	7.029	6.972	0.057	0.003	0.057
339635.23	2015015.41	DG-35	6.396	6.498	-0.102	0.010	0.102
327749.36	2016055.51	DG-36	8.094	8.108	-0.014	0.000	0.014
328017.60	2016533.90	DG-37	7.447	7.592	-0.145	0.021	0.145
331384.51	2017029.59	DG-38	6.046	6.027	0.019	0.000	0.019
329113.14	2010273.09	DG-4	7.410	7.389	0.021	0.000	0.021
332380.76	2017332.11	DG-40	2.737	2.687	0.050	0.003	0.050
331369.13	2000345.49	DG-48	30.283	30.292	-0.009	0.000	0.009
331848.24	2001169.14	DG-49	29.062	29.090	-0.028	0.001	0.028
330741.59	2010769.64	DG-5	7.089	7.124	-0.035	0.001	0.035
340450.93	2001677.89	DG-51	11.961	11.920	0.041	0.002	0.041
340450.93	2006982.48	DG-56	2.185	2.183	0.002	0.000	0.002
330611.83	2006753.82	DG-59	5.872	5.872	0.000	0.000	0.000
328733.21	2011214.87	DG-6	4.921	5.009	-0.088	0.008	0.088
329679.80	2015882.19	DG-6.1	4.011	4.032	-0.021	0.000	0.021
341883.45	2007465.63	DG-60	4.117	4.116	0.001	0.000	0.001
341883.45	2010736.65	DG-63	1.425	1.347	0.078	0.006	0.078
342343.27	2011516.56	DG-64	1.528	1.449	0.079	0.006	0.079
342343.27	2010233.82	DG-65	6.031	6.040	-0.009	0.000	0.009
343132.54	2015599.33	DG-66	2.831	3.176	-0.345	0.119	0.345
343132.54	2009495.37	DG-66.1	13.970	13.994	-0.024	0.001	0.024
343503.91	2010386.81	DG-66.2	11.099	11.099	0.000	0.000	0.000
343503.91	2011249.94	DG-66.3	12.314	12.287	0.027	0.001	0.027
343503.91	2011803.78	DG-66.4	5.051	5.045	0.006	0.000	0.006
341915.99	2008840.06	DG-67	3.106	3.107	-0.001	0.000	0.001
341915.99	2009441.44	DG-68	2.197	2.170	0.027	0.001	0.027
333107.09	2014943.37	DG-69	10.532	10.545	-0.013	0.000	0.013
340914.23	2011428.67	DG-7	4.154	4.115	0.039	0.002	0.039
340914.23	2008085.56	DG-71	4.101	4.160	-0.059	0.003	0.059
327147.10	2009907.51	DG-72	3.289	3.272	0.017	0.000	0.017
327147.10	2010417.47	DG-73	2.068	2.073	-0.005	0.000	0.005
327439.75	2011037.99	DG-73.1	1.581	1.417	0.164	0.027	0.164
333073.03	2008093.31	DG-74	2.621	2.591	0.030	0.001	0.030
333073.03	2011391.59	DG-74.1	1.521	1.543	-0.022	0.000	0.022
325921.14	2011864.36	DG-74.2	1.624	1.710	-0.086	0.007	0.086
325921.14	2008101.42	DG-75	11.666	11.621	0.045	0.002	0.045
325155.23	2010634.74	DG-76	1.911	1.896	0.015	0.000	0.015
325816.12	2008176.51	DG-77	2.297	2.219	0.078	0.006	0.078
333082.54	2005282.60	DG-79	0.000	0.172	-0.172	0.030	0.172
333082.54	2011609.16	DG-8	6.288	6.273	0.015	0.000	0.015
336317.92	2005283.54	DG-80	0.000	0.154	-0.154	0.024	0.154
336317.92	2009927.65	DG-81	1.225	1.214	0.011	0.000	0.011
326373.75	2010191.43	DG-82	1.471	1.450	0.021	0.000	0.021
328419.87	2007248.88	DG-83	0.000	0.132	-0.132	0.017	0.132
328599.93	2007248.75	DG-84	0.000	0.145	-0.145	0.021	0.145
329220.29	1998102.03	DG-85	31.249	31.279	-0.030	0.001	0.030

335424.28	2005987.82	DG-86	7.067	7.051	0.016	0.000	0.016
335424.28	1996407.49	DG-87	33.125	33.116	0.009	0.000	0.009
330018.03	2005952.79	DG-87.1	8.407	8.402	0.005	0.000	0.005
329959.78	1995726.67	DG-88	25.186	25.198	-0.012	0.000	0.012
329907.13	1995749.72	DG-89	26.175	26.195	-0.020	0.000	0.020
329246.67	2010306.28	DG-9	9.672	9.615	0.057	0.003	0.057
326836.98	2007830.15	DG-90	3.133	3.133	0.000	0.000	0.000
326836.98	2015499.67	DG-97	7.501	7.439	0.062	0.004	0.062
326564.65	2008063.70	DG-99	11.122	11.029	0.093	0.009	0.093
326564.65	2008057.86	DG-99.1	12.340	12.340	0.000	0.000	0.000
334879.81	2007170.89	DG-99.1.1	10.811	10.817	-0.006	0.000	0.006
334879.81	2008053.19	DG-99.2	14.234	14.192	0.042	0.002	0.042
333205.15	2026140.12	dg-b10-26	10.350	10.351	-0.001	0.000	0.001
333205.15	2027006.90	dg-b10-31	2.899	2.904	-0.005	0.000	0.005
328672.43	2028767.11	dg-b11-10	13.119	13.119	0.000	0.000	0.000
328672.43	2029578.77	dg-b11-11	7.554	7.550	0.004	0.000	0.004
326416.74	2028194.11	dg-b11-12	11.724	11.734	-0.010	0.000	0.010
326416.74	2029697.81	dg-b11-12.3	10.847	10.856	-0.009	0.000	0.009
326269.38	2029071.11	dg-b11-12.4	13.130	13.122	0.008	0.000	0.008
326269.38	2027871.55	dg-b11-12.5	7.825	7.805	0.020	0.000	0.020
326037.51	2028856.70	dg-b11-12.6	6.561	6.557	0.004	0.000	0.004
326037.51	2029801.34	dg-b11-13	14.166	14.169	-0.003	0.000	0.003
328202.45	2027929.92	dg-b11-32	2.504	2.489	0.015	0.000	0.015
328202.45	2026270.85	dg-b11-38	1.143	1.137	0.006	0.000	0.006
326256.47	2025571.68	dg-b11-39	1.901	1.885	0.016	0.000	0.016
326256.47	2027407.17	dg-b11-4	11.906	11.900	0.006	0.000	0.006
326315.91	2025640.68	dg-b11-40	1.083	1.079	0.004	0.000	0.004
326315.91	2025173.73	dg-b11-41	1.291	1.289	0.002	0.000	0.002
329243.27	2024556.28	dg-b11-41.1	2.578	2.570	0.008	0.000	0.008
329243.27	2024246.82	dg-b11-41.2	2.121	2.113	0.008	0.000	0.008
326704.16	2024940.19	dg-b11-41.3	1.824	1.821	0.003	0.000	0.003
329726.51	2024313.70	dg-b11-41.4	2.606	2.614	-0.008	0.000	0.008
327269.73	2024033.29	dg-b11-41.5	3.197	3.185	0.012	0.000	0.012
327269.73	2024583.58	dg-b11-42	1.230	1.226	0.004	0.000	0.004
336675.14	2024462.76	dg-b11-47.1	4.358	4.361	-0.003	0.000	0.003
332975.32	2024740.83	dg-b11-47.2	1.789	1.799	-0.010	0.000	0.010
336676.06	2025346.42	dg-b11-47.3	1.798	1.793	0.005	0.000	0.005
327510.31	2023597.85	dg-b11-47.4	9.982	9.963	0.019	0.000	0.019
328100.11	2027033.47	dg-b11-5	9.323	9.328	-0.005	0.000	0.005
339004.19	2023891.37	dg-b11-51	12.609	12.607	0.002	0.000	0.002
339004.21	2024580.89	dg-b11-52	7.277	7.287	-0.010	0.000	0.010
325294.85	2024752.54	dg-b11-53	5.009	5.021	-0.012	0.000	0.012
331322.40	2026156.75	dg-b11-54	2.369	2.374	-0.005	0.000	0.005
324797.18	2030501.73	dg-b11-63	1.460	1.436	0.024	0.001	0.024
331814.50	2030437.80	dg-b11-63.1	2.740	2.741	-0.001	0.000	0.001
323864.02	2029662.65	dg-b11-63.2	4.404	4.403	0.001	0.000	0.001
323870.06	2029968.64	dg-b11-63.3	1.209	1.211	-0.002	0.000	0.002
331987.47	2029296.61	dg-b11-63.4	2.155	2.159	-0.004	0.000	0.004
333313.86	2029803.04	dg-b11-63.5	2.149	2.151	-0.002	0.000	0.002
342721.21	2027160.19	dg-b11-66.10	2.096	2.080	0.016	0.000	0.016

342721.21	2026399.67	dg-b11-66.11	1.713	1.708	0.005	0.000	0.005
330624.99	2028866.36	dg-b11-66.2	3.658	3.660	-0.002	0.000	0.002
330624.99	2029211.64	dg-b11-66.3	1.245	1.252	-0.007	0.000	0.007
331391.80	2028373.06	dg-b11-66.4	4.349	4.333	0.016	0.000	0.016
331391.80	2028195.43	dg-b11-66.5	3.118	3.123	-0.005	0.000	0.005
332028.39	2027405.68	dg-b11-66.6	1.845	1.831	0.014	0.000	0.014
332331.38	2027482.83	dg-b11-66.7	1.762	1.761	0.001	0.000	0.001
332331.38	2027927.74	dg-b11-66.8	1.281	1.270	0.011	0.000	0.011
340213.66	2027378.30	dg-b11-66.9	4.378	4.379	-0.001	0.000	0.001
340213.66	2028656.62	dg-b11-68	1.314	1.326	-0.012	0.000	0.012
340213.66	2028003.24	dg-b11-70.2	2.371	2.371	0.000	0.000	0.000
338700.06	2028547.03	dg-b11-70.3	2.465	2.463	0.002	0.000	0.002
338700.06	2028162.49	dg-b11-70.4	3.012	2.985	0.027	0.001	0.027
342681.90	2027549.87	dg-b11-71	2.177	2.175	0.002	0.000	0.002
342949.69	2027262.61	dg-b11-72	3.092	3.108	-0.016	0.000	0.016
342114.32	2028196.89	dg-b11-75	4.021	4.020	0.001	0.000	0.001
341707.65	2028060.32	dg-b11-76	5.111	5.108	0.003	0.000	0.003
342103.41	2028261.75	dg-b11-77	2.005	2.003	0.002	0.000	0.002
341567.07	2029593.11	dg-b11-78.3	3.619	3.614	0.005	0.000	0.005
341293.79	2029062.64	dg-b11-78.4	3.198	3.199	-0.001	0.000	0.001
342184.64	2028975.21	dg-b11-78.5	4.752	4.738	0.014	0.000	0.014
337849.69	2029051.80	dg-b11-79	1.981	1.982	-0.001	0.000	0.001
337849.69	2037312.31	dg-b12-17	11.217	11.211	0.006	0.000	0.006
334571.65	2038013.30	dg-b12-18	9.543	9.543	0.000	0.000	0.000
335002.65	2036520.31	dg-b12-19	7.023	7.021	0.002	0.000	0.002
342037.88	2036305.41	dg-b12-20	8.043	8.042	0.001	0.000	0.001
334426.69	2037027.84	dg-b12-21	9.755	9.756	-0.001	0.000	0.001
334027.23	2037423.44	dg-b12-22	9.122	9.119	0.003	0.000	0.003
334360.24	2038114.24	dg-b12-23	6.767	6.739	0.028	0.001	0.028
334630.71	2036314.28	dg-b12-24	2.746	2.745	0.001	0.000	0.001
335203.53	2034958.55	dg-b12-24.1	5.363	5.343	0.020	0.000	0.020
335417.98	2035713.84	dg-b12-24.2	2.665	2.651	0.014	0.000	0.014
335902.50	2035680.50	dg-b12-25	2.536	2.536	0.000	0.000	0.000
333708.69	2036240.67	dg-b12-26	3.221	3.222	-0.001	0.000	0.001
336387.29	2037157.30	dg-b12-27	7.309	7.301	0.008	0.000	0.008
335964.73	2037895.94	dg-b12-28	3.459	3.456	0.003	0.000	0.003
336579.26	2036987.43	dg-b12-29	2.938	2.951	-0.013	0.000	0.013
336604.23	2038582.42	dg-b12-30	3.328	3.321	0.007	0.000	0.007
341743.73	2037965.95	dg-b12-31	2.866	2.861	0.005	0.000	0.005
337205.66	2039217.13	dg-b12-32	7.253	7.253	0.000	0.000	0.000
337972.46	2039924.47	dg-b12-33	6.208	6.209	-0.001	0.000	0.001
337283.92	2037825.00	dg-b12-34	3.475	3.472	0.003	0.000	0.003
337386.20	2038598.30	dg-b12-35	1.904	1.740	0.164	0.027	0.164
337996.96	2038854.64	dg-b12-36	1.828	1.702	0.126	0.016	0.126
338383.98	2039293.51	dg-b12-37	1.487	1.435	0.052	0.003	0.052
338009.43	2039833.35	dg-b12-38	1.203	1.190	0.013	0.000	0.013
337724.99	2038999.37	dg-b12-39	1.221	1.218	0.003	0.000	0.003
338441.81	2037987.63	dg-b12-40	2.797	2.739	0.058	0.003	0.058
338880.55	2038554.61	dg-b12-41	3.019	3.006	0.013	0.000	0.013
335206.73	2039011.76	dg-b12-42	3.053	3.057	-0.004	0.000	0.004

335264.71	2039257.30	dg-b12-43	0.755	0.750	0.005	0.000	0.005
337539.41	2039752.18	dg-b12-44	1.506	1.505	0.001	0.000	0.001
336938.97	2036895.67	dg-b12-44.2	1.773	1.770	0.003	0.000	0.003
336949.65	2036698.88	dg-b12-44.3	4.166	4.167	-0.001	0.000	0.001
336949.65	2037270.55	dg-b12-44.4	2.205	2.206	-0.001	0.000	0.001
336251.91	2037402.63	dg-b12-44.5	3.653	3.660	-0.007	0.000	0.007
337277.56	2037844.98	dg-b12-44.6	1.436	1.422	0.014	0.000	0.014
336579.09	2038482.70	dg-b12-44.7	1.128	1.127	0.001	0.000	0.001
335679.52	2038002.72	dg-b12-44.8	1.999	1.996	0.003	0.000	0.003
335775.00	2037467.50	dg-b12-44.9	1.533	1.534	-0.001	0.000	0.001
336699.67	2035959.43	dg-b12-45	2.535	2.533	0.002	0.000	0.002
336699.67	2040198.09	dg-b12-46	1.217	1.209	0.008	0.000	0.008
338675.86	2035979.81	dg-b12-47	2.479	2.513	-0.034	0.001	0.034
338434.93	2040641.31	dg-b12-48	1.588	1.594	-0.006	0.000	0.006
337603.72	2041316.39	dg-b12-49	1.015	1.030	-0.015	0.000	0.015
337603.72	2035392.12	dg-b12-50	1.006	0.982	0.024	0.001	0.024
338114.12	2034980.94	dg-b12-51	2.277	2.273	0.004	0.000	0.004
338114.12	2034385.30	dg-b12-52	2.424	2.424	0.000	0.000	0.000
339119.73	2034829.01	dg-b12-53	3.783	3.787	-0.004	0.000	0.004
340172.34	2036221.43	dg-b12-54	4.780	4.780	0.000	0.000	0.000
340872.37	2041572.29	dg-b12-55	2.732	2.739	-0.007	0.000	0.007
339388.40	2042592.31	dg-b12-56	0.909	0.909	0.000	0.000	0.000
339779.13	2041928.61	dg-b12-57	2.099	2.099	0.000	0.000	0.000
340002.69	2039287.90	dg-b12-58	2.341	2.340	0.001	0.000	0.001
340540.85	2039373.62	dg-b12-59	2.491	2.490	0.001	0.000	0.001
339279.54	2038656.24	dg-b12-60	1.994	2.000	-0.006	0.000	0.006
352237.83	2039470.22	dg-b12-61	2.666	2.662	0.004	0.000	0.004
352076.14	2040068.60	dg-b12-62	2.010	2.010	0.000	0.000	0.000
352479.07	2037729.59	dg-b12-72	1.574	1.728	-0.154	0.024	0.154
353214.16	2039149.31	dg-b12-73	3.600	3.600	0.000	0.000	0.000
353102.91	2038401.39	dg-b12-74	2.055	2.044	0.011	0.000	0.011
353718.87	2039036.55	dg-b12-75	8.087	8.080	0.007	0.000	0.007
353908.94	2038469.94	dg-b12-75.1	9.137	9.143	-0.006	0.000	0.006
353951.46	2037666.34	dg-b12-75.2	1.875	1.871	0.004	0.000	0.004
343345.33	2038020.16	dg-b12-75.3	3.064	3.063	0.001	0.000	0.001
342694.95	2038664.36	dg-b12-76	8.201	8.210	-0.009	0.000	0.009
354016.39	2038301.84	dg-b12-77	7.406	7.394	0.012	0.000	0.012
354688.12	2037190.08	dg-b12-78	2.571	2.514	0.057	0.003	0.057
354513.48	2038732.54	dg-b12-78.1	10.326	10.326	0.000	0.000	0.000
354748.29	2038884.73	dg-b12-78.2	4.218	4.215	0.003	0.000	0.003
354925.12	2038767.02	dg-b12-78.3	1.873	1.874	-0.001	0.000	0.001
355301.73	2038114.69	dg-b12-78.4	4.138	4.144	-0.006	0.000	0.006
355150.35	2036989.55	dg-b12-78.5	11.174	11.158	0.016	0.000	0.016
355315.25	2037402.89	dg-b12-78.6	7.975	7.974	0.001	0.000	0.001
354765.10	2036989.64	dg-b12-78.7	8.002	8.003	-0.001	0.000	0.001
343698.01	2037194.46	dg-b12-78.8	4.629	4.633	-0.004	0.000	0.004
343351.33	2038119.55	dg-b12-78.9	1.334	1.336	-0.002	0.000	0.002
343351.33	2036482.38	dg-b12-79	3.299	3.050	0.249	0.062	0.249
343020.22	2035894.47	dg-b12-80	3.999	3.999	0.000	0.000	0.000
343020.22	2035769.91	dg-b12-81	9.960	9.952	0.008	0.000	0.008

342172.29	2036387.18	dg-b12-82	4.824	4.831	-0.007	0.000	0.007
342172.29	2036325.42	dg-b12-83	3.909	3.868	0.041	0.002	0.041
342559.87	2035292.57	dg-b12-84	5.925	5.925	0.000	0.000	0.000
343600.88	2035199.56	dg-b12-85	11.307	11.286	0.021	0.000	0.021
344106.56	2040980.55	dg-b13-15	2.066	2.067	-0.001	0.000	0.001
344106.56	2040778.99	dg-b13-16	1.446	1.446	0.000	0.000	0.000
344631.35	2040268.14	dg-b13-17	2.767	2.756	0.011	0.000	0.011
351789.12	2039722.32	dg-b13-18	5.766	5.758	0.008	0.000	0.008
351317.43	2039610.46	dg-b13-19	3.577	3.581	-0.004	0.000	0.004
351658.46	2039196.49	dg-b13-20	5.435	5.443	-0.008	0.000	0.008
341215.08	2038938.79	dg-b13-21	6.846	6.837	0.009	0.000	0.009
341845.43	2037913.37	dg-b13-22	10.455	10.448	0.007	0.000	0.007
341449.03	2038807.41	dg-b13-23	6.441	6.441	0.000	0.000	0.000
341920.66	2040950.46	dg-b13-24	2.543	2.536	0.007	0.000	0.007
341449.95	2040142.94	dg-b13-25	2.732	2.735	-0.003	0.000	0.003
342012.55	2039585.81	dg-b13-26	3.711	3.709	0.002	0.000	0.002
342618.62	2041044.11	dg-b13-27	0.779	0.779	0.000	0.000	0.000
343004.38	2040828.28	dg-b13-51	0.932	0.924	0.008	0.000	0.008
342063.66	2040772.67	dg-b13-52	1.429	1.426	0.003	0.000	0.003
352028.05	2040949.73	dg-b13-53	2.791	2.775	0.016	0.000	0.016
340566.45	2040441.00	dg-b13-54	2.458	2.452	0.006	0.000	0.006
352497.46	2040080.10	dg-b13-55	3.343	3.349	-0.006	0.000	0.006
352512.81	2040668.95	dg-b13-56	5.364	5.340	0.024	0.001	0.024
339983.39	2041019.12	dg-b13-57	4.639	4.639	0.000	0.000	0.000
339985.29	2041635.58	dg-b13-58	0.957	0.954	0.003	0.000	0.003
339927.48	2041524.57	dg-b13-59	2.779	2.778	0.001	0.000	0.001
340346.92	2040035.23	dg-b13-60	8.773	8.775	-0.002	0.000	0.002
341337.85	2040679.20	dg-b13-61	4.337	4.318	0.019	0.000	0.019
353243.10	2039624.31	dg-b13-62	10.751	10.747	0.004	0.000	0.004
353706.20	2041160.63	dg-b13-wm	1.004	0.993	0.011	0.000	0.011
353969.92	2015191.55	dg-b4-11	13.183	13.178	0.005	0.000	0.005
344415.07	2014334.65	dg-b4-12	16.500	16.498	0.002	0.000	0.002
344889.66	2017398.97	dg-b4-122	1.896	1.885	0.011	0.000	0.011
345346.29	2013715.12	dg-b4-13	17.014	17.050	-0.036	0.001	0.036
345445.47	2014326.00	dg-b4-15	17.269	17.276	-0.007	0.000	0.007
345677.04	2013676.75	dg-b4-16	17.714	17.665	0.049	0.002	0.049
347233.25	2013059.01	dg-b4-17	14.520	14.501	0.019	0.000	0.019
346177.53	2011660.48	dg-b4-18.1	11.687	11.674	0.013	0.000	0.013
346405.61	2012409.40	dg-b4-18.2	14.186	14.174	0.012	0.000	0.012
346916.66	2012515.21	dg-b4-19	16.983	17.002	-0.019	0.000	0.019
348521.90	2013058.39	dg-b4-20	15.313	15.303	0.010	0.000	0.010
348673.06	2012703.17	dg-b4-21	13.887	13.893	-0.006	0.000	0.006
349212.64	2012062.07	dg-b4-22	14.726	14.740	-0.014	0.000	0.014
347366.53	2012811.87	dg-b4-32	6.911	6.902	0.009	0.000	0.009
347821.79	2012093.87	dg-b4-33	6.068	6.092	-0.024	0.001	0.024
346667.85	2013588.63	dg-b4-34	8.005	8.028	-0.023	0.001	0.023
349195.58	2014324.53	dg-b4-36	12.914	12.892	0.022	0.000	0.022
349915.95	2015124.58	dg-b4-37	14.292	14.284	0.008	0.000	0.008
350601.66	2014472.94	dg-b4-38	19.312	19.271	0.041	0.002	0.041
351179.53	2015339.86	dg-b4-39	17.564	17.585	-0.021	0.000	0.021

351451.52	2015739.16	dg-b4-40	17.465	17.592	-0.127	0.016	0.127
350707.99	2015979.78	dg-b4-41	11.821	11.781	0.040	0.002	0.040
350370.21	2016422.67	dg-b4-43	3.278	3.252	0.026	0.001	0.026
349479.80	2016921.46	dg-b4-44	2.779	2.810	-0.031	0.001	0.031
350058.13	2017458.52	dg-b4-45	1.318	1.301	0.017	0.000	0.017
345923.64	2015603.96	dg-b4-48	6.507	6.594	-0.087	0.008	0.087
345923.64	2015591.12	dg-b4-49	3.963	3.974	-0.011	0.000	0.011
345139.68	2015080.55	dg-b4-50	4.002	4.005	-0.003	0.000	0.003
344626.29	2015390.62	dg-b4-50.2	1.320	1.286	0.034	0.001	0.034
344952.98	2014646.24	dg-b4-50.3	3.576	3.575	0.001	0.000	0.001
343980.38	2013945.86	dg-b4-50.4	3.742	3.742	0.000	0.000	0.000
344738.96	2014793.56	dg-b4-51	3.232	3.248	-0.016	0.000	0.016
344297.70	2014633.82	dg-b4-53	1.418	1.434	-0.016	0.000	0.016
354704.31	2013979.82	dg-b4-54	4.411	4.356	0.055	0.003	0.055
354235.67	2014157.90	dg-b4-55	1.563	1.491	0.072	0.005	0.072
354006.12	2013734.19	dg-b4-56	3.265	3.245	0.020	0.000	0.020
354077.60	2013419.72	dg-b4-57	4.777	4.809	-0.032	0.001	0.032
353503.35	2012818.70	dg-b4-58	7.104	7.074	0.030	0.001	0.030
353486.22	2012751.43	dg-b4-59	1.570	1.411	0.159	0.025	0.159
354449.88	2013180.67	dg-b4-60	3.255	3.255	0.000	0.000	0.000
353037.96	2012565.98	dg-b4-7	11.847	11.799	0.048	0.002	0.048
352641.15	2013038.92	dg-b4-8	14.645	14.658	-0.013	0.000	0.013
353430.23	2013522.99	dg-b4-9	14.592	14.535	0.057	0.003	0.057
353155.75	1994299.78	DG-GCP 1	29.245	29.241	0.004	0.000	0.004
352346.58	2002392.63	DG-GCP 10	5.001	4.959	0.042	0.002	0.042
344274.72	1999872.20	DG-GCP 101	6.970	6.970	0.000	0.000	0.000
345177.44	1999845.71	DG-GCP 102	5.412	5.409	0.003	0.000	0.003
345971.84	2000356.18	DG-GCP 103	5.691	5.679	0.012	0.000	0.012
346780.76	1998282.37	DG-GCP 104.2	21.980	21.978	0.002	0.000	0.002
346315.21	1998152.77	DG-GCP 104.3	28.983	28.986	-0.003	0.000	0.003
346572.08	1999192.96	DG-GCP 105	22.997	23.003	-0.006	0.000	0.006
347433.95	2000235.66	DG-GCP 107	19.580	19.581	-0.001	0.000	0.001
348207.36	2000714.57	DG-GCP 108	9.606	9.604	0.002	0.000	0.002
347428.51	2001053.66	DG-GCP 109	3.582	3.584	-0.002	0.000	0.002
348328.55	1996686.46	DG-GCP 109.1	11.524	11.523	0.001	0.000	0.001
350458.42	1997256.41	DG-GCP 109.2	9.541	9.541	0.000	0.000	0.000
350150.18	2001599.98	DG-GCP 110	6.735	6.734	0.001	0.000	0.001
349691.17	2001509.11	DG-GCP 111	7.646	7.641	0.005	0.000	0.005
345028.21	2000628.98	DG-GCP 112	18.230	18.221	0.009	0.000	0.009
333753.39	2002344.24	DG-GCP 115	11.385	11.426	-0.041	0.002	0.041
333753.39	2002847.07	DG-GCP 116	8.375	8.375	0.000	0.000	0.000
333469.54	2001737.15	DG-GCP 116.1	8.865	8.869	-0.004	0.000	0.004
331071.17	2002617.09	DG-GCP 12	11.800	11.790	0.010	0.000	0.010
333083.15	2003171.40	DG-GCP 13	13.650	13.669	-0.019	0.000	0.019
331994.79	2003660.19	DG-GCP 13.1	4.561	4.564	-0.003	0.000	0.003
332045.68	2003495.46	DG-GCP 16.1	12.822	12.840	-0.018	0.000	0.018
332817.02	2002667.59	DG-GCP 17	20.192	20.241	-0.049	0.002	0.049
332117.97	2001815.88	DG-GCP 18	17.982	18.053	-0.071	0.005	0.071
332498.92	2000991.69	DG-GCP 19	19.760	19.778	-0.018	0.000	0.018
331854.51	2000543.83	DG-GCP 2	12.223	12.220	0.003	0.000	0.003

331545.83	2002341.10	DG-GCP 24	21.743	21.745	-0.002	0.000	0.002
330924.94	2003464.44	DG-GCP 27	21.864	21.865	-0.001	0.000	0.001
330766.16	2000353.59	DG-GCP 3	14.485	14.525	-0.040	0.002	0.040
330055.36	2000212.07	DG-GCP 4	19.534	19.538	-0.004	0.000	0.004
329909.53	2003695.44	DG-GCP 45	14.947	14.941	0.006	0.000	0.006
330665.53	2000903.16	DG-GCP 5	16.749	16.747	0.002	0.000	0.002
331250.07	2001446.02	DG-GCP 50	25.147	25.158	-0.011	0.000	0.011
331884.70	2002926.07	DG-GCP 52	9.639	9.659	-0.020	0.000	0.020
332672.35	2003447.02	DG-GCP 53	7.217	7.217	0.000	0.000	0.000
332708.36	2001325.21	DG-GCP 6	12.033	12.031	0.002	0.000	0.002
333260.30	1993971.20	DG-GCP 61.1	24.497	24.492	0.005	0.000	0.005
333260.30	1993478.99	DG-GCP 61.2	26.334	26.318	0.016	0.000	0.016
332655.16	1993348.59	DG-GCP 62	32.195	32.180	0.015	0.000	0.015
332655.16	1992880.42	DG-GCP 63	21.886	21.878	0.008	0.000	0.008
331584.37	1993256.41	DG-GCP 64	22.743	22.723	0.020	0.000	0.020
331584.37	1992437.11	DG-GCP 65	21.673	21.671	0.002	0.000	0.002
330863.34	1992600.56	DG-GCP 65.1	22.996	22.993	0.003	0.000	0.003
330863.34	1992447.35	DG-GCP 67	28.078	28.055	0.023	0.001	0.023
330331.48	1992817.11	DG-GCP 68	46.960	46.965	-0.005	0.000	0.005
330331.48	1993082.25	DG-GCP 69	29.986	29.981	0.005	0.000	0.005
331672.77	2001598.00	DG-GCP 7	7.300	7.295	0.005	0.000	0.005
330927.22	1993080.96	DG-GCP 70	31.116	31.100	0.016	0.000	0.016
330968.60	1993439.83	DG-GCP 71	29.195	29.182	0.013	0.000	0.013
330012.94	1993858.64	DG-GCP 73	29.805	29.798	0.007	0.000	0.007
329662.34	1994570.75	DG-GCP 74	30.084	30.087	-0.003	0.000	0.003
330201.18	1994828.21	DG-GCP 75	24.129	24.127	0.002	0.000	0.002
330293.00	1995324.52	DG-GCP 76	30.419	30.413	0.006	0.000	0.006
328818.45	1995070.96	DG-GCP 77	28.162	28.148	0.014	0.000	0.014
329658.39	1994894.03	DG-GCP 78	28.697	28.687	0.010	0.000	0.010
328645.72	1995773.14	DG-GCP 79	26.199	26.193	0.006	0.000	0.006
328714.76	2001890.28	DG-GCP 8	12.603	12.603	0.000	0.000	0.000
329205.82	1996216.32	DG-GCP 80	29.081	29.100	-0.019	0.000	0.019
329278.92	1996978.57	DG-GCP 81	30.281	30.287	-0.006	0.000	0.006
328663.19	1996548.57	DG-GCP 81.1	30.279	30.285	-0.006	0.000	0.006
328606.12	1997054.46	DG-GCP 82	24.216	24.213	0.003	0.000	0.003
333419.75	1997532.70	DG-GCP 83	31.081	31.062	0.019	0.000	0.019
333662.46	1997596.22	DG-GCP 84	26.386	26.373	0.013	0.000	0.013
333892.96	1998102.06	DG-GCP 85	31.250	31.248	0.002	0.000	0.002
328931.65	1995726.65	DG-GCP 88	25.186	25.192	-0.006	0.000	0.006
331852.89	2002240.49	DG-GCP 9	16.460	16.471	-0.011	0.000	0.011
331953.03	1996619.26	DG-GCP 90	33.924	33.931	-0.007	0.000	0.007
322458.44	1996504.17	DG-GCP 91	18.301	18.303	-0.002	0.000	0.002
323158.83	1997144.94	DG-GCP 92	11.522	11.509	0.013	0.000	0.013
323437.23	1997765.42	DG-GCP 93	9.952	9.950	0.002	0.000	0.002
326906.30	1998841.65	DG-GCP 94	7.696	7.663	0.033	0.001	0.033
326271.16	1997072.18	DG-GCP 95	9.490	9.493	-0.003	0.000	0.003
324772.21	1997320.14	DG-GCP 96	25.349	25.338	0.011	0.000	0.011
324975.39	1998050.31	DG-GCP 97	14.486	14.486	0.000	0.000	0.000
324099.60	1997400.83	DG-GCP 98	30.901	30.870	0.031	0.001	0.031
323472.57	1998327.58	DG-GCP 98.1	22.404	22.403	0.001	0.000	0.001

322189.72	1999126.52	DG-GCP 99.1	12.812	12.801	0.011	0.000	0.011
322189.72	1999312.82	DG-GCP 99.2	5.565	5.559	0.006	0.000	0.006
321337.23	1999517.18	DG-GCP 99.2.1	12.822	12.805	0.017	0.000	0.017
321337.23	1991782.51	DG-GCP block 1 2	26.949	26.983	-0.034	0.001	0.034
324364.45	2008877.03	dg-GCP-b1	8.836	8.852	-0.016	0.000	0.016
324520.19	1998633.92	dg-GCP-b1-1	2.109	2.109	0.000	0.000	0.000
326059.59	1997419.88	dg-GCP-b1-11	12.826	12.836	-0.010	0.000	0.010
325456.79	1997338.09	dg-GCP-b1-11.1	10.013	9.986	0.027	0.001	0.027
324804.62	1996264.26	dg-GCP-b1-111	6.502	6.502	0.000	0.000	0.000
325085.06	1993251.92	dg-GCP-b1-111.2	33.248	33.250	-0.002	0.000	0.002
331246.10	2002220.41	dg-GCP-b1-112	12.347	12.342	0.005	0.000	0.005
330798.93	2004489.91	dg-GCP-b1-113	3.479	3.479	0.000	0.000	0.000
331315.79	1999015.21	dg-GCP-b1-12	13.387	13.387	0.000	0.000	0.000
329710.59	1998719.59	dg-GCP-b1-13	10.626	10.580	0.046	0.002	0.046
329406.96	1998106.96	dg-GCP-b1-14	12.787	12.808	-0.021	0.000	0.021
329087.94	1998717.82	dg-GCP-b1-15	9.614	9.624	-0.010	0.000	0.010
328770.21	1999354.16	dg-GCP-b1-2	3.598	3.598	0.000	0.000	0.000
331019.99	2009354.49	dg-GCP-b1-2.1	6.815	6.815	0.000	0.000	0.000
327189.64	2009683.80	dg-GCP-b1-2.2	11.902	11.893	0.009	0.000	0.009
327741.40	1997922.52	dg-GCP-b1-23	11.807	11.805	0.002	0.000	0.002
330394.42	1997656.17	dg-GCP-b1-24	16.774	16.765	0.009	0.000	0.009
329482.35	1997479.48	dg-GCP-b1-25	4.705	4.702	0.003	0.000	0.003
327082.64	1997119.81	dg-GCP-b1-26	11.473	11.439	0.034	0.001	0.034
329778.26	1997684.13	dg-GCP-b1-27	9.174	9.119	0.055	0.003	0.055
326851.99	1996958.55	dg-GCP-b1-28	12.587	12.572	0.015	0.000	0.015
325138.15	1996846.24	dg-GCP-b1-29	12.569	12.564	0.005	0.000	0.005
325138.15	1996683.99	dg-GCP-b1-30	15.731	15.716	0.015	0.000	0.015
325127.01	1996469.39	dg-GCP-b1-31	6.156	6.154	0.002	0.000	0.002
325127.01	1995852.20	dg-GCP-b1-32	3.691	3.689	0.002	0.000	0.002
330801.14	1999129.32	dg-GCP-b1-5.1	9.810	9.810	0.000	0.000	0.000
329723.86	1999430.29	dg-GCP-b1-5.2	8.816	8.808	0.008	0.000	0.008
329607.03	1998373.44	dg-GCP-b1-5.3	10.590	10.580	0.010	0.000	0.010
328795.72	2005095.84	dg-GCP-b1-55	2.387	2.387	0.000	0.000	0.000
330089.65	2005526.53	dg-GCP-b1-56	2.090	2.091	-0.001	0.000	0.001
330472.39	2005901.98	dg-GCP-b1-57	2.051	2.051	0.000	0.000	0.000
329996.07	2007039.07	dg-GCP-b1-58	3.740	3.734	0.006	0.000	0.006
329698.46	2008126.57	dg-GCP-b1-59	4.346	4.347	-0.001	0.000	0.001
329059.77	1998752.66	dg-GCP-b1-6	10.293	10.293	0.000	0.000	0.000
328102.76	2011060.93	dg-GCP-b1-62	4.565	4.572	-0.007	0.000	0.007
327085.02	2009497.44	dg-GCP-b1-63	13.867	13.870	-0.003	0.000	0.003
332156.50	2008805.63	dg-GCP-b1-65	12.872	12.857	0.015	0.000	0.015
326499.86	2008132.16	dg-GCP-b1-66	2.450	2.450	0.000	0.000	0.000
325963.50	2009105.45	dg-GCP-b1-67	2.521	2.520	0.001	0.000	0.001
324840.22	2008947.36	dg-GCP-b1-68	0.937	0.937	0.000	0.000	0.000
325576.67	2009456.70	dg-GCP-b1-69	5.669	6.052	-0.383	0.147	0.383
324471.97	2008782.50	dg-GCP-b1-69.3	2.497	2.336	0.161	0.026	0.161
324699.80	2006459.61	dg-GCP-b1-69.4	3.723	3.725	-0.002	0.000	0.002
325401.87	1999332.99	dg-GCP-b1-7	4.933	4.957	-0.024	0.001	0.024
326189.71	2012484.48	dg-GCP-b1-70	3.209	3.209	0.000	0.000	0.000
326554.93	2011113.60	dg-GCP-b1-71	1.581	1.586	-0.005	0.000	0.005

331456.81	2011208.18	dg-GCP-b1-72	1.841	1.823	0.018	0.000	0.018
325650.97	2009590.21	dg-GCP-b1-73	3.674	3.683	-0.009	0.000	0.009
325349.76	2009337.84	dg-GCP-b1-74	2.328	2.333	-0.005	0.000	0.005
325759.48	2009652.11	dg-GCP-b1-75	1.443	1.473	-0.030	0.001	0.030
326610.22	2009338.06	dg-GCP-b1-76	2.338	2.292	0.046	0.002	0.046
325918.22	1995847.18	dg-GCP-b1-80	30.728	30.721	0.007	0.000	0.007
326774.43	2002635.96	dg-GCP-b1-f@\$k48	11.017	11.041	-0.024	0.001	0.024
325294.78	1997423.56	dg-GCP-b1-np?	12.805	12.721	0.084	0.007	0.084
323864.02	1997534.39	dg-GCP-b1-np1	10.789	10.788	0.001	0.000	0.001
330607.31	2008053.30	dg-GCP-b3-100	14.237	14.205	0.032	0.001	0.032
324243.90	2008331.52	dg-GCP-b3-101	13.586	13.564	0.022	0.000	0.022
323322.02	2008057.98	dg-GCP-b3-102	12.348	12.343	0.005	0.000	0.005
323132.79	2007417.04	dg-GCP-b3-103	2.474	2.481	-0.007	0.000	0.007
322694.00	2006367.23	dg-GCP-b3-104	3.360	3.362	-0.002	0.000	0.002
322133.52	2006750.61	dg-GCP-b3-105	2.276	2.276	0.000	0.000	0.000
322708.18	2006624.06	dg-GCP-b3-106	16.112	16.098	0.014	0.000	0.014
321964.15	2007365.82	dg-GCP-b3-107	11.168	11.134	0.034	0.001	0.034
321964.15	2006974.03	dg-GCP-b3-108	17.271	17.271	0.000	0.000	0.000
324200.57	2005742.05	dg-GCP-b3-109	20.013	20.002	0.011	0.000	0.011
323660.13	2004986.92	dg-GCP-b3-110	16.392	16.398	-0.006	0.000	0.006
324972.71	2005933.06	dg-GCP-b3-111	15.651	15.652	-0.001	0.000	0.001
324544.08	2006369.98	dg-GCP-b3-112	13.415	13.408	0.007	0.000	0.007
323852.41	2007042.72	dg-GCP-b3-113	10.547	10.543	0.004	0.000	0.004
322880.03	2007249.24	dg-GCP-b3-114	15.977	15.985	-0.008	0.000	0.008
323958.99	2006944.85	dg-GCP-b3-115	19.037	19.036	0.001	0.000	0.001
328892.03	2006316.64	dg-GCP-b3-116	20.183	20.183	0.000	0.000	0.000
328892.03	2006429.73	dg-GCP-b3-117	7.831	7.829	0.002	0.000	0.002
332916.72	2005858.33	dg-GCP-b3-118	16.589	16.591	-0.002	0.000	0.002
336186.12	2003750.12	dg-GCP-b3-12	8.800	8.808	-0.008	0.000	0.008
339146.21	2005585.13	dg-GCP-b3-120	11.436	11.440	-0.004	0.000	0.004
339552.10	2004691.18	dg-GCP-b3-121	15.671	15.671	0.000	0.000	0.000
321557.21	2004983.32	dg-GCP-b3-122	8.828	8.823	0.005	0.000	0.005
324041.95	2005621.27	dg-GCP-b3-123	4.132	4.131	0.001	0.000	0.001
325783.79	2004261.12	dg-GCP-b3-124	5.368	5.370	-0.002	0.000	0.002
324538.47	2004675.74	dg-GCP-b3-125	6.101	6.106	-0.005	0.000	0.005
339446.23	2004317.54	dg-GCP-b3-126	13.943	13.928	0.015	0.000	0.015
340086.05	2004854.50	dg-GCP-b3-127	18.281	18.280	0.001	0.000	0.001
339717.08	2004092.30	dg-GCP-b3-128	15.432	15.432	0.000	0.000	0.000
340927.46	2002045.27	dg-GCP-b3-129	26.509	26.490	0.019	0.000	0.019
336141.83	2002818.07	dg-GCP-b3-130	22.843	22.851	-0.008	0.000	0.008
333213.51	2003168.55	dg-GCP-b3-131	19.171	19.172	-0.001	0.000	0.001
332468.24	2003865.36	dg-GCP-b3-132	17.441	17.426	0.015	0.000	0.015
341956.27	2003495.41	dg-GCP-b3-133	12.816	12.800	0.016	0.000	0.016
342627.48	2003166.55	dg-GCP-b3-134	13.194	13.198	-0.004	0.000	0.004
343386.24	2002667.65	dg-GCP-b3-135	20.193	20.193	0.000	0.000	0.000
341816.87	2001761.56	dg-GCP-b3-136	16.983	16.982	0.001	0.000	0.001
340972.91	2001815.81	dg-GCP-b3-137	17.981	17.974	0.007	0.000	0.007
341128.45	2002062.26	dg-GCP-b3-138	21.459	21.442	0.017	0.000	0.017
342900.68	2001276.83	dg-GCP-b3-139	20.373	20.377	-0.004	0.000	0.004
342220.96	2000991.80	dg-GCP-b3-140	19.759	19.752	0.007	0.000	0.007

343032.00	2003867.29	dg-GCP-b3-141	9.560	9.576	-0.016	0.000	0.016
342961.74	2003353.00	dg-GCP-b3-142	11.636	11.640	-0.004	0.000	0.004
337451.53	2002879.45	dg-GCP-b3-143	15.624	15.609	0.015	0.000	0.015
338456.16	2002021.74	dg-GCP-b3-144	17.554	17.547	0.007	0.000	0.007
339046.95	2004216.23	dg-GCP-b3-15.1	19.316	19.315	0.001	0.000	0.001
324015.72	2004574.76	dg-GCP-b3-15.2	6.896	6.917	-0.021	0.000	0.021
324274.41	2004604.66	dg-GCP-b3-82	10.298	10.296	0.002	0.000	0.002
324763.40	2005273.35	dg-GCP-b3-83	14.270	14.272	-0.002	0.000	0.002
326428.47	2005987.79	dg-GCP-b3-84	7.067	7.025	0.042	0.002	0.042
326338.12	2005952.75	dg-GCP-b3-85	8.407	8.407	0.000	0.000	0.000
337012.62	2007070.37	dg-GCP-b3-86	7.233	7.206	0.027	0.001	0.027
329195.49	2006481.69	dg-GCP-b3-96	8.435	8.437	-0.002	0.000	0.002
331049.31	2006877.31	dg-GCP-b3-97	5.068	5.030	0.038	0.001	0.038
330821.90	2007271.57	dg-GCP-b3-98	6.129	6.107	0.022	0.000	0.022
325482.44	2007830.08	dg-GCP-b3-99	3.101	3.101	0.000	0.000	0.000
326156.96	1998117.81	dg-GCP-b5-16	8.473	8.460	0.013	0.000	0.013
325065.78	2006475.78	dg-GCP-b5-17	1.004	0.976	0.028	0.001	0.028
329254.15	1996219.10	dg-GCP-b5-26	12.583	12.575	0.008	0.000	0.008
325552.65	1996219.14	dg-GCP-b5-26.1	12.583	12.578	0.005	0.000	0.005
328044.96	1995850.45	dg-GCP-b5-27.1	16.227	16.177	0.050	0.003	0.050
325528.19	1995494.31	dg-GCP-b5-27.111	7.583	7.511	0.072	0.005	0.072
336765.31	1995394.04	dg-GCP-b5-27.112	4.941	4.946	-0.005	0.000	0.005
326564.90	1995059.41	dg-GCP-b5-27.2	18.548	18.437	0.111	0.012	0.111
327031.64	1995014.91	dg-GCP-b5-29	13.854	13.860	-0.006	0.000	0.006
327939.95	1995098.87	dg-GCP-b5-29.1	11.997	11.993	0.004	0.000	0.004
328135.52	1994727.15	dg-GCP-b5-29.2	10.468	10.467	0.001	0.000	0.001
327416.94	1995541.15	dg-GCP-b5-29.3	11.990	11.993	-0.003	0.000	0.003
327301.13	1994363.02	dg-GCP-b5-30.2	5.246	5.204	0.042	0.002	0.042
327416.95	1994407.50	dg-GCP-b5-30.21	10.519	10.488	0.031	0.001	0.031
325485.03	1994045.28	dg-GCP-b5-30.22	11.773	11.608	0.165	0.027	0.165
325727.73	1994760.99	dg-GCP-b5-32	7.360	7.358	0.002	0.000	0.002
339137.28	1994476.62	dg-GCP-b5-32.1	13.085	13.069	0.016	0.000	0.016
339528.20	1994646.66	dg-GCP-b5-32.2	9.596	9.437	0.159	0.025	0.159
332331.40	1994121.87	dg-GCP-b5-32.3	5.780	5.784	-0.004	0.000	0.004
332331.40	1993771.24	dg-GCP-b5-32.4	10.030	10.051	-0.021	0.000	0.021
331875.78	1994022.39	dg-GCP-b5-33	13.893	13.862	0.031	0.001	0.031
331391.92	1993230.39	dg-GCP-b5-34	7.559	7.577	-0.018	0.000	0.018
331391.92	1992657.73	dg-GCP-b5-35	14.874	14.685	0.189	0.036	0.189
327559.10	1992957.24	dg-GCP-b5-36	4.602	4.499	0.103	0.011	0.103
326884.21	1993007.35	dg-GCP-b5-36.1	15.823	15.864	-0.041	0.002	0.041
327097.35	1993384.96	dg-GCP-b5-36.2	9.894	10.072	-0.178	0.032	0.178
328397.41	1992691.33	dg-GCP-b5-38	19.404	19.404	0.000	0.000	0.000
328805.13	1993052.10	dg-GCP-b5-39	12.394	12.345	0.049	0.002	0.049
329297.10	1993375.05	dg-GCP-b5-39.2	7.314	6.962	0.352	0.124	0.352
329043.17	2007239.12	dg-GCP-b5-39.3	4.141	4.135	0.006	0.000	0.006
329879.79	2007702.13	dg-GCP-b5-39.4	2.273	2.358	-0.085	0.007	0.085
330221.48	1993328.46	dg-GCP-b5-40	9.302	9.248	0.054	0.003	0.054
330935.99	1995087.15	dg-GCP-b5-40-30c	4.883	4.878	0.005	0.000	0.005
331025.47	1993626.37	dg-GCP-b5-41	11.894	11.890	0.004	0.000	0.004
330397.67	1993230.13	dg-GCP-b5-43	5.142	5.119	0.023	0.001	0.023

329818.78	1992793.60	dg-GCP-b5-44	5.837	5.795	0.042	0.002	0.042
329550.98	1995494.96	dg-GCP-b5-51	12.074	12.057	0.017	0.000	0.017
327686.18	1995630.68	dg-GCP-b5-52	4.249	4.245	0.004	0.000	0.004
328371.19	2005746.55	dg-GCP-b5-71.1	8.741	8.742	-0.001	0.000	0.001
330481.28	2004856.96	dg-GCP-b5-76	2.362	2.355	0.007	0.000	0.007
327355.03	2004868.11	dg-GCP-b5-77	7.045	7.030	0.015	0.000	0.015
327991.88	2004207.48	dg-GCP-b5-78	2.931	2.920	0.011	0.000	0.011
327172.69	2004015.56	dg-GCP-b5-79	1.604	1.585	0.019	0.000	0.019
326355.80	1995579.22	dg-GCP-b5-np56	14.411	14.404	0.007	0.000	0.007
325477.20	2007479.20	dg-GCP-b6-84	1.282	1.334	-0.052	0.003	0.052
326168.13	2007277.51	dg-GCP-b6-85	1.671	1.609	0.062	0.004	0.062
327194.35	2007654.69	dg-GCP-b6-86	5.175	5.188	-0.013	0.000	0.013
328733.27	2007472.12	dg-GCP-b6-wm	0.948	0.814	0.134	0.018	0.134
329113.13	2008341.40	dg-GCP-b7-1	0.689	0.509	0.180	0.032	0.180
327749.26	2011692.82	dg-GCP-b7-13	0.898	0.994	-0.096	0.009	0.096
328017.44	2011188.52	dg-GCP-b7-14	7.891	7.904	-0.013	0.000	0.013
328596.26	2010490.83	dg-GCP-b7-15	2.607	2.637	-0.030	0.001	0.030
328387.42	2007779.74	dg-GCP-b7-2	1.551	1.608	-0.057	0.003	0.057
329710.77	2008292.58	dg-GCP-b7-3	0.880	0.819	0.061	0.004	0.061
330057.13	2008961.02	dg-GCP-b7-4	1.155	1.156	-0.001	0.000	0.001
329407.00	2009340.79	dg-GCP-b7-5	1.477	1.465	0.012	0.000	0.012
329807.39	2008665.82	dg-GCP-b7-6	2.926	2.942	-0.016	0.000	0.016
329088.13	2006802.86	dg-GCP-b7-7	0.845	0.801	0.044	0.002	0.044
328601.03	2007940.19	dg-GCP-b7-78	8.144	8.140	0.004	0.000	0.004
328339.71	2007350.02	dg-GCP-b7-79	10.834	10.732	0.102	0.010	0.102
328770.19	2006653.53	dg-GCP-b7-8	2.665	2.633	0.032	0.001	0.032
326561.53	2007467.80	dg-GCP-b7-8.1	8.637	8.612	0.025	0.001	0.025
326363.42	2008320.69	dg-GCP-b7-80	8.433	8.308	0.125	0.016	0.125
326691.44	2008148.15	dg-GCP-b7-81	14.072	14.093	-0.021	0.000	0.021
326397.66	2007952.39	dg-GCP-b7-82	13.326	13.316	0.010	0.000	0.010
329979.31	2000146.35	DG-np	28.179	28.119	0.060	0.004	0.060
330942.58	2003719.29	GCP-10	3.705	3.705	0.000	0.000	0.000
330555.71	1994577.29	GCP-103.2	5.045	5.036	0.009	0.000	0.009
330723.67	2000694.11	GCP-103.3	20.580	20.574	0.006	0.000	0.006
331322.45	2000345.70	GCP-103.4	30.306	30.346	-0.040	0.002	0.040
331814.62	2001169.27	GCP-103.5	29.061	29.059	0.002	0.000	0.002
331429.86	1995829.38	GCP-103.6	33.417	33.404	0.013	0.000	0.013
332024.28	2002765.94	GCP-11	4.543	4.543	0.000	0.000	0.000
332572.17	1990428.35	GCP-37	15.018	15.018	0.000	0.000	0.000
332577.58	1988365.74	GCP-59	26.504	26.489	0.015	0.000	0.015
333313.90	1987528.57	GCP-60	22.611	22.588	0.023	0.001	0.023
340383.71	1987309.36	GCP-60.1	23.047	23.043	0.004	0.000	0.004
337839.86	1986871.40	GCP-61	32.026	31.999	0.027	0.001	0.027
341516.80	1988010.89	GCP-62.1	28.195	28.195	0.000	0.000	0.000
341516.83	1988318.01	GCP-62.1.1	21.248	21.254	-0.006	0.000	0.006
342146.22	1985128.13	GCP-62.1.2	31.997	32.030	-0.033	0.001	0.033
343156.91	1985414.91	GCP-67	36.438	36.432	0.006	0.000	0.006
343377.18	1984987.12	GCP-68	38.558	38.562	-0.004	0.000	0.004
342518.79	1986552.96	GCP-68.1	28.539	28.540	-0.001	0.000	0.001
342056.39	1986350.48	GCP-68.2	29.855	29.865	-0.010	0.000	0.010

341306.41	1986088.51	GCP-68.3	27.541	27.538	0.003	0.000	0.003
340472.58	1988735.34	GCP-69	23.123	23.141	-0.018	0.000	0.018
340589.63	1989129.55	GCP-70	28.340	28.307	0.033	0.001	0.033
339658.28	1989735.25	GCP-72	19.475	19.484	-0.009	0.000	0.009
340972.38	1991540.11	GCP-85	25.957	25.970	-0.013	0.000	0.013
340880.80	2003124.18	GCP-86	12.507	12.507	0.000	0.000	0.000
343255.14	1992284.17	GCP-89	11.569	11.566	0.003	0.000	0.003
342655.97	1992579.53	GCP-92	9.805	9.803	0.002	0.000	0.002
341590.12	1992216.91	GCP-93	13.317	13.313	0.004	0.000	0.004
343088.66	1993975.37	GCP-94	7.325	7.329	-0.004	0.000	0.004
342371.85	1993004.03	GCP-94.1	12.936	12.931	0.005	0.000	0.005
341987.01	1994192.62	GCP-96.2	5.468	5.475	-0.007	0.000	0.007
342240.01	1993782.51	GCP-96.3	4.632	4.620	0.012	0.000	0.012
342820.38	1993977.78	GCP-np	7.304	7.282	0.022	0.000	0.022
343297.88	1992587.09	GCP-np 3	9.748	9.866	-0.118	0.014	0.118
341842.54	1992400.67	GCP-np 5	10.728	10.930	-0.202	0.041	0.202
341300.44	1987092.63	GCP-np 6	26.751	26.731	0.020	0.000	0.020
341125.95	1986870.84	GCP-np 7	32.450	32.432	0.018	0.000	0.018
340191.67	1993269.74	GCP-np1	6.785	6.874	-0.089	0.008	0.089
339749.85	1987250.73	GCP-np8	32.529	32.529	0.000	0.000	0.000
339780.44	1987240.19	GCP-np9	32.563	32.563	0.000	0.000	0.000
339780.44	1991432.24	nh b1 GCP 1	29.566	29.570	-0.004	0.000	0.004
339956.91	1991580.99	nh b1 GCP 1.2	22.996	22.934	0.062	0.004	0.062
339956.91	1986127.97	nh b1 GCP 10	15.674	15.681	-0.007	0.000	0.007
339933.60	1993293.09	nh b1 GCP 100	32.519	32.520	-0.001	0.000	0.001
339691.99	1993787.66	nh b1 GCP 101	35.885	35.885	0.000	0.000	0.000
340368.81	1994178.15	nh b1 GCP 102.1	28.021	28.050	-0.029	0.001	0.029
342819.18	1993958.12	nh b1 GCP 102.2	19.837	19.859	-0.022	0.000	0.022
342374.52	1993958.12	nh b1 GCP 102.3	19.837	19.849	-0.012	0.000	0.012
340760.38	1994711.62	nh b1 GCP 103.1	16.602	16.605	-0.003	0.000	0.003
339728.40	1995091.76	nh b1 GCP 103.3	11.146	11.146	0.000	0.000	0.000
339911.47	1994457.61	nh b1 GCP 104	33.962	33.953	0.009	0.000	0.009
340258.28	1995122.40	nh b1 GCP 105	22.512	22.551	-0.039	0.002	0.039
339529.57	1995151.64	nh b1 GCP 106	24.738	24.730	0.008	0.000	0.008
339507.70	1995984.13	nh b1 GCP 107	20.006	20.066	-0.060	0.004	0.060
340340.80	1996708.76	nh b1 GCP 109.1	11.653	11.653	0.000	0.000	0.000
342815.48	1986761.16	nh b1 GCP 11	16.582	16.585	-0.003	0.000	0.003
341684.01	1993936.42	nh b1 GCP 110.1	34.502	34.489	0.013	0.000	0.013
341684.01	1994429.05	nh b1 GCP 110.2	32.975	32.984	-0.009	0.000	0.009
341154.52	1993516.76	nh b1 GCP 111.1	31.870	31.865	0.005	0.000	0.005
341154.52	1992974.87	nh b1 GCP 112	33.284	33.288	-0.004	0.000	0.004
342056.77	1992240.43	nh b1 GCP 113	32.315	32.377	-0.062	0.004	0.062
342056.77	1991825.84	nh b1 GCP 113.2	38.197	38.156	0.041	0.002	0.041
341677.98	1992231.50	nh b1 GCP 114	34.473	34.488	-0.015	0.000	0.015
341677.98	1991529.11	nh b1 GCP 115	28.988	28.985	0.003	0.000	0.003
340213.54	1990797.37	nh b1 GCP 116	34.257	34.265	-0.008	0.000	0.008
340213.54	1990994.51	nh b1 GCP 117	39.512	39.532	-0.020	0.000	0.020
343987.57	1990951.18	nh b1 GCP 118	35.142	35.138	0.004	0.000	0.004
344056.83	1990957.64	nh b1 GCP 119	32.929	32.925	0.004	0.000	0.004
343600.03	1986054.77	nh b1 GCP 12	20.531	20.531	0.000	0.000	0.000

340390.13	1990786.02	nh b1 GCP 120.1	32.618	32.620	-0.002	0.000	0.002
340390.13	1991499.62	nh b1 GCP 120.2	31.872	31.876	-0.004	0.000	0.004
341786.01	1991687.57	nh b1 GCP 121	32.142	32.155	-0.013	0.000	0.013
341754.85	1991586.41	nh b1 GCP 121.2	31.987	31.993	-0.006	0.000	0.006
342108.74	1992548.40	nh b1 GCP 122	31.950	31.971	-0.021	0.000	0.021
342162.16	1992359.39	nh b1 GCP 123	30.189	30.147	0.042	0.002	0.042
342047.20	1992183.82	nh b1 GCP 124	35.646	35.649	-0.003	0.000	0.003
342497.14	1987176.52	nh b1 GCP 13	17.020	17.021	-0.001	0.000	0.001
342497.14	1988324.62	nh b1 GCP 14	15.860	15.854	0.006	0.000	0.006
343512.13	1987576.99	nh b1 GCP 15	13.919	13.918	0.001	0.000	0.001
342704.43	1987962.44	nh b1 GCP 16	16.619	16.622	-0.003	0.000	0.003
342769.28	1988604.46	nh b1 GCP 17	22.555	22.505	0.050	0.003	0.050
343033.61	1987998.32	nh b1 GCP 18	29.708	29.716	-0.008	0.000	0.008
343033.61	1987235.56	nh b1 GCP 19	20.452	20.450	0.002	0.000	0.002
343977.67	1987502.00	nh b1 GCP 19.2	41.267	41.290	-0.023	0.001	0.023
344729.88	1991782.49	nh b1 GCP 2	26.948	26.947	0.001	0.000	0.001
327936.20	1986713.12	nh b1 GCP 20	31.453	31.469	-0.016	0.000	0.016
327936.20	1985700.69	nh b1 GCP 22	44.360	44.338	0.022	0.000	0.022
332369.75	1989325.18	nh b1 GCP 23	22.827	22.830	-0.003	0.000	0.003
320871.06	1984863.12	nh b1 GCP 24	28.938	28.925	0.013	0.000	0.013
326685.26	1990106.42	nh b1 GCP 25	16.748	16.733	0.015	0.000	0.015
326685.26	1991985.51	nh b1 GCP 26	33.056	33.009	0.047	0.002	0.047
327147.03	1991306.36	nh b1 GCP 27	35.435	35.436	-0.001	0.000	0.001
327147.03	1990427.53	nh b1 GCP 28	35.605	35.520	0.085	0.007	0.085
327439.69	1989542.47	nh b1 GCP 29	46.244	46.239	0.005	0.000	0.005
324905.05	1990955.27	nh b1 GCP 3	32.744	32.750	-0.006	0.000	0.006
332298.65	1991070.58	nh b1 GCP 3.2	31.458	31.457	0.001	0.000	0.001
318739.14	1990330.96	nh b1 GCP 3.3	25.233	25.233	0.000	0.000	0.000
320434.11	1990752.52	nh b1 GCP 4	17.258	17.254	0.004	0.000	0.004
319545.76	1989933.07	nh b1 GCP 5.1	11.477	11.476	0.001	0.000	0.001
320082.40	1990635.49	nh b1 GCP 5.2	19.135	19.121	0.014	0.000	0.014
318841.72	1989301.53	nh b1 GCP 6	7.465	7.461	0.004	0.000	0.004
318472.92	1988704.90	nh b1 GCP 7	7.063	7.053	0.010	0.000	0.010
318798.95	1991282.22	nh b1 GCP 74	12.389	12.401	-0.012	0.000	0.012
319825.31	1990766.81	nh b1 GCP 75	18.947	18.960	-0.013	0.000	0.013
320510.91	1989469.28	nh b1 GCP 75.2	32.108	32.105	0.003	0.000	0.003
320599.55	1990076.92	nh b1 GCP 76	25.872	25.872	0.000	0.000	0.000
320926.42	1989929.80	nh b1 GCP 77	28.900	28.898	0.002	0.000	0.002
320001.63	1989248.85	nh b1 GCP 79	40.130	40.124	0.006	0.000	0.006
319619.43	1987882.53	nh b1 GCP 8.1	8.146	8.146	0.000	0.000	0.000
319292.40	1988357.30	nh b1 GCP 8.2	9.175	9.173	0.002	0.000	0.002
319672.37	1991512.36	nh b1 GCP 83	30.404	30.423	-0.019	0.000	0.019
319156.96	1991067.05	nh b1 GCP 84	31.467	31.473	-0.006	0.000	0.006
320805.92	1991716.32	nh b1 GCP 85	26.547	26.542	0.005	0.000	0.005
332556.88	1987061.37	nh b1 GCP 9.1	9.442	9.442	0.000	0.000	0.000
334777.65	1986227.17	nh b1 GCP 9.2	9.582	9.582	0.000	0.000	0.000
319768.16	1987184.94	nh b1 GCP 9.3	10.368	10.368	0.000	0.000	0.000
319490.04	1991507.49	nh b1 GCP 90	16.109	16.113	-0.004	0.000	0.004
319101.83	1992505.79	nh b1 GCP 93	21.977	21.966	0.011	0.000	0.011
320605.14	1993154.68	nh b1 GCP 96.1	20.768	20.776	-0.008	0.000	0.008

320473.78	1993221.63	nh b1 GCP 97.1	25.743	25.693	0.050	0.003	0.050
320439.16	1992496.06	nh b1 GCP 97.2	29.680	29.675	0.005	0.000	0.005
320093.14	1992256.13	nh b1 GCP 98	31.174	31.162	0.012	0.000	0.012
320600.13	1992854.37	nh b1 GCP 99	31.373	31.383	-0.010	0.000	0.010
319493.80	1985167.36	nh b1.2 GCP 26	17.946	17.925	0.021	0.000	0.021
319295.68	1984954.87	nh b1.2 GCP 27	11.078	11.062	0.016	0.000	0.016
320624.96	1984209.58	nh b1.2 GCP 28	10.426	10.304	0.122	0.015	0.122
318833.37	1984253.83	nh b1.2 GCP 29	5.871	5.871	0.000	0.000	0.000
320219.17	1985186.33	nh b1.2 GCP 30	6.747	6.747	0.000	0.000	0.000
318496.40	1985091.85	nh b1.2 GCP 31	37.102	37.102	0.000	0.000	0.000
318485.40	1985415.37	nh b1.2 GCP 32	41.034	41.034	0.000	0.000	0.000
330231.56	1986087.53	nh b1.2 GCP 33	46.725	46.734	-0.009	0.000	0.009
330231.56	1986313.10	nh b1.2 GCP 34	49.070	49.095	-0.025	0.001	0.025
329619.78	1985937.25	nh b1.2 GCP 35	33.091	33.088	0.003	0.000	0.003
329619.78	1986950.15	nh b1.2 GCP 36	36.990	36.977	0.013	0.000	0.013
328351.87	1986689.58	nh b1.2 GCP 37	51.024	51.026	-0.002	0.000	0.002
322848.27	1987521.18	nh b1.2 GCP 38	49.471	49.445	0.026	0.001	0.026
323375.87	1987527.55	nh b1.2 GCP 39	48.970	48.974	-0.004	0.000	0.004
322380.86	1986923.75	nh b1.2 GCP 39.2	52.668	52.669	-0.001	0.000	0.001
321614.44	1988408.14	nh b1.2 GCP 41	40.357	40.363	-0.006	0.000	0.006
321614.44	1989114.87	nh b1.2 GCP 42	46.178	46.176	0.002	0.000	0.002
321876.12	1990008.95	nh b1.2 GCP 43	41.072	41.069	0.003	0.000	0.003
321709.00	1990220.93	nh b1.2 GCP 44	36.554	36.544	0.010	0.000	0.010
322954.78	1989426.59	nh b1.2 GCP 45	41.266	41.227	0.039	0.002	0.039
322485.21	1988895.12	nh b1.2 GCP 46	45.662	45.732	-0.070	0.005	0.070
323220.67	1989748.04	nh b1.2 GCP 46.2	32.365	32.365	0.000	0.000	0.000
323220.67	1990474.73	nh b1.2 GCP 46.3	33.189	33.187	0.002	0.000	0.002
322667.35	1988751.71	nh b1.2 GCP 47	49.134	49.138	-0.004	0.000	0.004
322667.35	1988180.57	nh b1.2 GCP 48	42.454	42.457	-0.003	0.000	0.003
322152.10	1988075.60	nh b1.2 GCP 49	41.621	41.640	-0.019	0.000	0.019
322152.10	1989526.03	nh b1.2 GCP 50	34.136	34.134	0.002	0.000	0.002
328339.26	1987842.45	nh b1.2 GCP 52	37.176	37.179	-0.003	0.000	0.003
324174.20	1988556.84	nh b1.2 GCP 53	34.162	34.164	-0.002	0.000	0.002
324174.20	1987359.14	nh b1.2 GCP 53.2	31.823	31.834	-0.011	0.000	0.011
323854.56	1986468.13	nh b1.2 GCP 54	30.106	30.108	-0.002	0.000	0.002
323854.56	1987735.16	nh b1.2 GCP 56.1	34.798	34.798	0.000	0.000	0.000
324459.66	1988491.05	nh b1.2 GCP 57	32.509	32.510	-0.001	0.000	0.001
324834.98	1987480.72	nh b1.2 GCP 58	25.777	25.756	0.021	0.000	0.021
324834.98	1991276.37	nh b1.2 GCP 74.2	11.948	11.946	0.002	0.000	0.002
325332.04	1989239.74	nh b1.2 GCP 78	31.089	31.090	-0.001	0.000	0.001
325332.04	1989981.03	nh b1.2 GCP 80	28.810	28.798	0.012	0.000	0.012
324715.94	1990220.18	nh b1.2 GCP 81	31.914	31.912	0.002	0.000	0.002
324002.70	1990686.93	nh b1.2 GCP 82	32.187	32.189	-0.002	0.000	0.002
323461.75	1990665.04	nh b1.2 GCP 86	29.664	29.656	0.008	0.000	0.008
323716.66	2017669.43	nh b10 GCP 1	7.387	7.385	0.002	0.000	0.002
324371.53	2019386.56	nh b10 GCP 10	5.424	5.428	-0.004	0.000	0.004
325087.42	2020742.18	nh b10 GCP 11	4.563	4.537	0.026	0.001	0.026
326052.11	2021626.30	nh b10 GCP 11.2	2.685	2.674	0.011	0.000	0.011
327633.54	2022987.68	nh b10 GCP 12	8.953	8.910	0.043	0.002	0.043
326749.75	2023796.26	nh b10 GCP 13	6.623	6.624	-0.001	0.000	0.001

326620.85	2024182.13	nh b10 GCP 14	9.528	9.497	0.031	0.001	0.031
325776.67	2024965.93	nh b10 GCP 15	12.177	12.153	0.024	0.001	0.024
325751.90	2024585.54	nh b10 GCP 16.1	8.072	8.066	0.006	0.000	0.006
325813.81	2025126.19	nh b10 GCP 16.2	11.793	11.763	0.030	0.001	0.030
325813.81	2026163.37	nh b10 GCP 17.1	10.551	10.543	0.008	0.000	0.008
326590.08	2025568.11	nh b10 GCP 17.2	14.599	14.555	0.044	0.002	0.044
326590.08	2025868.17	nh b10 GCP 18	12.618	12.608	0.010	0.000	0.010
327276.17	2025399.54	nh b10 GCP 19	10.841	10.844	-0.003	0.000	0.003
327276.17	2026091.70	nh b10 GCP 20	2.810	2.793	0.017	0.000	0.017
327507.50	2026508.65	nh b10 GCP 21.1	5.717	5.717	0.000	0.000	0.000
327798.07	2026589.89	nh b10 GCP 21.2	5.537	5.537	0.000	0.000	0.000
328076.56	2026590.86	nh b10 GCP 22	8.094	8.094	0.000	0.000	0.000
327208.44	2026608.79	nh b10 GCP 23.1	8.365	8.365	0.000	0.000	0.000
326757.90	2026593.95	nh b10 GCP 23.2	8.491	8.491	0.000	0.000	0.000
326482.19	2025842.92	nh b10 GCP 23.3	7.129	7.106	0.023	0.001	0.023
326973.16	2026624.92	nh b10 GCP 24	11.412	11.412	0.000	0.000	0.000
325930.91	2025855.97	nh b10 GCP 26	9.160	9.181	-0.021	0.000	0.021
328892.07	2025116.92	nh b10 GCP 28	4.634	4.603	0.031	0.001	0.031
328892.07	2025251.17	nh b10 GCP 29.1	5.963	5.947	0.016	0.000	0.016
326275.22	2024708.25	nh b10 GCP 29.2	6.395	6.397	-0.002	0.000	0.002
326022.35	2024432.17	nh b10 GCP 29.3	1.511	1.541	-0.030	0.001	0.030
328044.14	2024667.59	nh b10 GCP 30	9.503	9.507	-0.004	0.000	0.004
325813.35	2025143.82	nh b10 GCP 31.1	9.125	9.130	-0.005	0.000	0.005
328954.65	2025191.78	nh b10 GCP 31.2	6.334	6.335	-0.001	0.000	0.001
328834.97	2025762.70	nh b10 GCP 31.3	7.983	7.983	0.000	0.000	0.000
326817.02	2025899.36	nh b10 GCP 33	9.165	9.163	0.002	0.000	0.002
328049.46	2025380.48	nh b10 GCP 34	2.852	2.855	-0.003	0.000	0.003
328049.46	2024656.01	nh b10 GCP 35.1	8.931	8.917	0.014	0.000	0.014
327424.04	2024455.63	nh b10 GCP 35.2	3.572	3.408	0.164	0.027	0.164
327212.32	2023937.86	nh b10 GCP 36	7.472	7.463	0.009	0.000	0.009
326989.04	2023882.09	nh b10 GCP 37.1	7.263	7.264	-0.001	0.000	0.001
328691.28	2023903.41	nh b10 GCP 38	5.134	5.135	-0.001	0.000	0.001
328099.67	2023794.22	nh b10 GCP 39.1	1.469	1.470	-0.001	0.000	0.001
328040.72	2023086.36	nh b10 GCP 39.2	2.600	2.560	0.040	0.002	0.040
329509.24	2017853.63	nh b10 GCP 4.1	8.260	8.257	0.003	0.000	0.003
329559.08	2018012.32	nh b10 GCP 4.2	9.743	9.714	0.029	0.001	0.029
329957.38	2022932.62	nh b10 GCP 40	3.684	3.686	-0.002	0.000	0.002
329927.70	2022236.51	nh b10 GCP 41	2.951	2.964	-0.013	0.000	0.013
329738.39	2022574.66	nh b10 GCP 42.1	4.691	4.675	0.016	0.000	0.016
318969.27	2023359.62	nh b10 GCP 42.3	8.600	8.572	0.028	0.001	0.028
319610.11	2015737.82	nh b10 GCP 43	6.228	6.191	0.037	0.001	0.037
322258.75	2023013.66	nh b10 GCP 43.2	4.180	4.174	0.006	0.000	0.006
319921.52	2016167.00	nh b10 GCP 44	3.034	3.077	-0.043	0.002	0.043
320963.56	2015946.63	nh b10 GCP 45	5.575	5.517	0.058	0.003	0.058
321376.78	2015485.03	nh b10 GCP 46	9.887	9.828	0.059	0.003	0.059
329563.15	2014922.45	nh b10 GCP 47	6.759	6.737	0.022	0.000	0.022
328805.96	2022255.09	nh b10 GCP 47.1	2.452	2.530	-0.078	0.006	0.078
322551.56	2021908.76	nh b10 GCP 47.2	8.570	8.578	-0.008	0.000	0.008
321911.88	2022002.33	nh b10 GCP 48	7.668	7.650	0.018	0.000	0.018
321658.45	2021296.84	nh b10 GCP 49	8.029	8.096	-0.067	0.004	0.067

329373.50	2018506.77	nh b10 GCP 5	6.695	6.709	-0.014	0.000	0.014
329164.34	2020812.71	nh b10 GCP 50	10.315	10.319	-0.004	0.000	0.004
328869.03	2021369.67	nh b10 GCP 51	7.712	7.702	0.010	0.000	0.010
319875.06	2021523.73	nh b10 GCP 52	4.057	4.054	0.003	0.000	0.003
320935.93	2015078.76	nh b10 GCP 52.1	1.512	1.511	0.001	0.000	0.001
321273.52	2015069.82	nh b10 GCP 52.2	1.489	1.515	-0.026	0.001	0.026
322076.50	2021996.34	nh b10 GCP 53	2.765	2.765	0.000	0.000	0.000
321931.69	2020379.94	nh b10 GCP 56.1	10.874	10.915	-0.041	0.002	0.041
322831.81	2019925.13	nh b10 GCP 56.2	11.449	11.373	0.076	0.006	0.076
323414.49	2014504.14	nh b10 GCP 57	2.254	2.211	0.043	0.002	0.043
327441.13	2019561.98	nh b10 GCP 58	9.941	9.960	-0.019	0.000	0.019
327993.47	2019031.33	nh b10 GCP 59	7.500	7.479	0.021	0.000	0.021
327641.02	2018956.28	nh b10 GCP 6	7.173	7.167	0.006	0.000	0.006
328664.64	2018431.44	nh b10 GCP 60	5.438	5.432	0.006	0.000	0.006
328897.11	2019356.89	nh b10 GCP 7	10.162	10.148	0.014	0.000	0.014
325099.48	2020262.75	nh b10 GCP 8	7.265	7.268	-0.003	0.000	0.003
324188.66	2019845.88	nh b10 GCP 9	6.805	6.768	0.037	0.001	0.037
324967.71	2022767.69	nh b11 GCO 70	6.456	6.466	-0.010	0.000	0.010
323935.87	2023287.71	nh b11 GCO 70.2	5.449	5.447	0.002	0.000	0.002
323228.81	2023230.53	nh b11 GCO 71.1	3.100	3.092	0.008	0.000	0.008
323467.43	2023297.60	nh b11 GCO 71.2	2.897	2.895	0.002	0.000	0.002
324500.23	2023464.49	nh b11 GCO 71.3	3.561	3.573	-0.012	0.000	0.012
324727.42	2022504.95	nh b11 GCO 73	2.570	2.572	-0.002	0.000	0.002
323884.58	2023480.53	nh b11 GCO 74	2.410	2.412	-0.002	0.000	0.002
325410.72	2022975.24	nh b11 GCO 75	1.053	1.052	0.001	0.000	0.001
323840.28	2022663.22	nh b11 GCO 77	1.047	1.043	0.004	0.000	0.004
324154.61	2017574.86	nh b11 GCP 10	3.034	3.034	0.000	0.000	0.000
324270.14	2018576.82	nh b11 GCP 100.1	5.382	5.382	0.000	0.000	0.000
325115.55	2019040.08	nh b11 GCP 101	14.156	14.103	0.053	0.003	0.053
325160.62	2019254.49	nh b11 GCP 102	14.339	14.342	-0.003	0.000	0.003
325971.34	2020081.34	nh b11 GCP 103	17.221	17.221	0.000	0.000	0.000
326049.49	2018228.58	nh b11 GCP 109	10.887	10.883	0.004	0.000	0.004
325760.07	2018543.13	nh b11 GCP 111	11.244	11.242	0.002	0.000	0.002
324995.55	2016624.32	nh b11 GCP 116.1	6.865	6.859	0.006	0.000	0.006
324855.22	2016628.79	nh b11 GCP 12	4.734	4.725	0.009	0.000	0.009
325719.53	2018376.76	nh b11 GCP 15	7.370	7.373	-0.003	0.000	0.003
323394.65	2018080.95	nh b11 GCP 16	4.545	4.553	-0.008	0.000	0.008
322967.16	2019040.42	nh b11 GCP 17.2	5.012	5.003	0.009	0.000	0.009
323182.96	2019156.35	nh b11 GCP 18	5.899	5.845	0.054	0.003	0.054
322494.52	2020097.57	nh b11 GCP 19	5.973	5.998	-0.025	0.001	0.025
322617.54	2015308.97	nh b11 GCP 2	12.558	12.587	-0.029	0.001	0.029
321974.83	2020039.25	nh b11 GCP 20.1	7.554	7.556	-0.002	0.000	0.002
322293.09	2020574.52	nh b11 GCP 20.2	10.263	10.264	-0.001	0.000	0.001
321288.89	2020948.38	nh b11 GCP 21	10.867	10.863	0.004	0.000	0.004
318978.73	2021297.49	nh b11 GCP 22	6.096	6.053	0.043	0.002	0.043
320582.25	2021972.07	nh b11 GCP 23	9.733	9.563	0.170	0.029	0.170
322037.54	2022705.25	nh b11 GCP 24	12.724	12.576	0.148	0.022	0.148
322976.03	2023633.57	nh b11 GCP 26	7.737	7.688	0.049	0.002	0.049
322618.75	2025169.37	nh b11 GCP 28	12.146	12.064	0.082	0.007	0.082
321326.82	2015742.63	nh b11 GCP 3	13.023	13.022	0.001	0.000	0.001

338977.22	2025920.26	nh b11 GCP 30.1	3.807	3.819	-0.012	0.000	0.012
338977.22	2025679.36	nh b11 GCP 30.2	6.456	6.458	-0.002	0.000	0.002
341710.59	2026401.99	nh b11 GCP 30.3	3.059	3.068	-0.009	0.000	0.009
339755.91	2016009.15	nh b11 GCP 4	2.965	2.954	0.011	0.000	0.011
339755.91	2024041.95	nh b11 GCP 43.2	1.667	1.665	0.002	0.000	0.002
340364.19	2016111.87	nh b11 GCP 5	1.987	1.989	-0.002	0.000	0.002
340933.09	2023373.14	nh b11 GCP 52	11.476	11.507	-0.031	0.001	0.031
341148.91	2023875.69	nh b11 GCP 53	10.779	10.802	-0.023	0.001	0.023
340629.08	2024581.12	nh b11 GCP 54	7.280	7.278	0.002	0.000	0.002
340629.08	2025479.59	nh b11 GCP 55	4.297	4.261	0.036	0.001	0.036
340867.14	2026013.80	nh b11 GCP 56	1.680	1.675	0.005	0.000	0.005
341646.01	2026048.09	nh b11 GCP 57	2.628	2.624	0.004	0.000	0.004
341520.99	2024391.38	nh b11 GCP 58	12.523	12.533	-0.010	0.000	0.010
340501.63	2025408.29	nh b11 GCP 59.1	6.645	6.646	-0.001	0.000	0.001
340501.63	2024928.70	nh b11 GCP 59.2	6.877	6.901	-0.024	0.001	0.024
340734.59	2023690.67	nh b11 GCP 61	11.751	11.747	0.004	0.000	0.004
341484.71	2022375.15	nh b11 GCP 66	11.688	11.688	0.000	0.000	0.000
342111.79	2022751.32	nh b11 GCP 67.1	12.950	12.951	-0.001	0.000	0.001
342817.80	2022063.54	nh b11 GCP 67.2	12.539	12.539	0.000	0.000	0.000
342872.51	2021738.89	nh b11 GCP 68.2	14.499	14.478	0.021	0.000	0.021
343508.49	2021597.55	nh b11 GCP 69	14.495	14.504	-0.009	0.000	0.009
344332.22	2017338.72	nh b11 GCP 7.1	4.861	4.857	0.004	0.000	0.004
345117.16	2022145.26	nh b11 GCP 72.1	8.019	7.982	0.037	0.001	0.037
345727.52	2022538.83	nh b11 GCP 72.2	4.134	4.146	-0.012	0.000	0.012
345739.54	2021984.97	nh b11 GCP 76	1.550	1.592	-0.042	0.002	0.042
346546.32	2021211.94	nh b11 GCP 78	2.158	2.146	0.012	0.000	0.012
346465.70	2021855.40	nh b11 GCP 79	1.076	1.020	0.056	0.003	0.056
346466.38	2016941.22	nh b11 GCP 8	3.657	3.655	0.002	0.000	0.002
345741.81	2020406.74	nh b11 GCP 80	2.388	2.393	-0.005	0.000	0.005
345840.10	2020834.49	nh b11 GCP 81	1.322	1.322	0.000	0.000	0.000
346429.67	2019945.45	nh b11 GCP 82	1.835	1.840	-0.005	0.000	0.005
345078.36	2020550.98	nh b11 GCP 88	2.937	2.932	0.005	0.000	0.005
344785.11	2020332.07	nh b11 GCP 89	12.330	12.270	0.060	0.004	0.060
343980.58	2017533.75	nh b11 GCP 9	2.556	2.556	0.000	0.000	0.000
343997.64	2021311.81	nh b11 GCP 90	6.252	6.249	0.003	0.000	0.003
344908.64	2021075.14	nh b11 GCP 91	15.899	15.904	-0.005	0.000	0.005
343241.84	2020695.86	nh b11 GCP 92.1	16.113	16.111	0.002	0.000	0.002
344127.38	2020957.21	nh b11 GCP 92.2	14.525	14.526	-0.001	0.000	0.001
343415.89	2020050.11	nh b11 GCP 92.3	15.033	15.035	-0.002	0.000	0.002
344020.66	2021382.39	nh b11 GCP 93	12.869	12.872	-0.003	0.000	0.003
344776.35	2019679.28	nh b11 GCP 99.1	15.204	15.214	-0.010	0.000	0.010
345621.31	2020147.26	nh b11 GCP 99.2	15.060	15.098	-0.038	0.001	0.038
346519.89	2026161.44	nh b12 GCP 1	4.382	4.339	0.043	0.002	0.043
346416.86	2030510.77	nh b12 GCP 13	11.100	11.095	0.005	0.000	0.005
339626.88	2030493.38	nh b12 GCP 14	5.426	5.413	0.013	0.000	0.013
340079.15	2031289.82	nh b12 GCP 15	9.323	9.320	0.003	0.000	0.003
345710.44	2031467.00	nh b12 GCP 16	5.559	5.559	0.000	0.000	0.000
345944.92	2032266.41	nh b12 GCP 17	4.874	4.880	-0.006	0.000	0.006
345944.92	2032335.57	nh b12 GCP 17.1	15.798	15.781	0.017	0.000	0.017
344831.63	2032707.38	nh b12 GCP 17.2	11.562	11.560	0.002	0.000	0.002

344888.92	2033155.48	nh b12 GCP 19.1	5.019	4.991	0.028	0.001	0.028
341848.70	2033236.50	nh b12 GCP 19.2	12.242	12.241	0.001	0.000	0.001
343672.97	2026608.36	nh b12 GCP 2	4.521	4.521	0.000	0.000	0.000
340469.83	2033939.93	nh b12 GCP 20	9.389	9.341	0.048	0.002	0.048
343111.08	2034512.48	nh b12 GCP 21.1	3.420	3.395	0.025	0.001	0.025
341170.18	2034874.37	nh b12 GCP 21.2	2.992	2.997	-0.005	0.000	0.005
343000.90	2033884.24	nh b12 GCP 22	7.968	7.974	-0.006	0.000	0.006
340856.93	2034628.12	nh b12 GCP 23	9.755	9.746	0.009	0.000	0.009
343271.39	2035542.55	nh b12 GCP 26	4.339	4.349	-0.010	0.000	0.010
341221.81	2026313.91	nh b12 GCP 3	11.597	11.565	0.032	0.001	0.032
343983.84	2037463.92	nh b12 GCP 31	3.971	3.965	0.006	0.000	0.006
344314.01	2037099.24	nh b12 GCP 35	3.213	3.210	0.003	0.000	0.003
345190.87	2036985.93	nh b12 GCP 36.2	2.725	2.738	-0.013	0.000	0.013
340858.00	2036159.39	nh b12 GCP 38	3.036	3.020	0.016	0.000	0.016
345071.11	2036867.51	nh b12 GCP 39	1.590	1.578	0.012	0.000	0.012
345071.11	2035374.90	nh b12 GCP 48	5.278	5.273	0.005	0.000	0.005
340252.46	2034210.08	nh b12 GCP 49.1	3.705	3.697	0.008	0.000	0.008
339759.66	2034557.62	nh b12 GCP 49.2	4.124	4.106	0.018	0.000	0.018
344354.45	2035177.67	nh b12 GCP 49.3	2.783	2.777	0.006	0.000	0.006
339702.02	2033694.51	nh b12 GCP 53	3.432	3.431	0.001	0.000	0.001
343511.53	2032894.96	nh b12 GCP 54.1	4.768	4.769	-0.001	0.000	0.001
339393.27	2033496.14	nh b12 GCP 54.2	3.129	3.149	-0.020	0.000	0.020
342893.93	2033144.84	nh b12 GCP 55	3.405	3.400	0.005	0.000	0.005
338704.54	2033854.28	nh b12 GCP 56	2.350	2.348	0.002	0.000	0.002
338703.47	2032250.41	nh b12 GCP 57.1	2.308	2.259	0.049	0.002	0.049
342330.90	2032474.84	nh b12 GCP 57.2	1.682	1.687	-0.005	0.000	0.005
343630.23	2032072.63	nh b12 GCP 57.3	1.272	1.264	0.008	0.000	0.008
343271.57	2031046.10	nh b12 GCP 59.1	3.632	3.650	-0.018	0.000	0.018
337687.21	2030355.00	nh b12 GCP 59.2	3.948	3.947	0.001	0.000	0.001
342951.04	2031744.52	nh b12 GCP 59.3	2.765	2.766	-0.001	0.000	0.001
342240.79	2027261.84	nh b12 GCP 6	5.804	5.793	0.011	0.000	0.011
340723.26	2031055.72	nh b12 GCP 60.1	3.255	3.261	-0.006	0.000	0.006
341504.78	2031496.74	nh b12 GCP 60.2	1.445	1.441	0.004	0.000	0.004
336851.42	2031221.95	nh b12 GCP 61	1.069	1.066	0.003	0.000	0.003
340141.10	2033228.30	nh b12 GCP 62	12.430	12.429	0.001	0.000	0.001
340420.59	2026895.98	nh b12 GCP 7	7.518	7.503	0.015	0.000	0.015
341099.49	2027572.07	nh b12 GCP 73	3.035	3.028	0.007	0.000	0.007
335397.14	2029936.51	nh b12 GCP 80.1	4.418	4.426	-0.008	0.000	0.008
335891.58	2029567.04	nh b12 GCP 80.2	4.812	4.811	0.001	0.000	0.001
334189.64	2030660.80	nh b12 GCP 81	4.092	4.073	0.019	0.000	0.019
334786.38	2030758.25	nh b12 GCP 82	5.122	5.122	0.000	0.000	0.000
335288.84	2030897.70	nh b12 GCP 83.1	11.963	11.974	-0.011	0.000	0.011
333614.66	2031527.63	nh b12 GCP 83.2	15.629	15.637	-0.008	0.000	0.008
333260.11	2031889.68	nh b12 GCP 84	10.357	10.354	0.003	0.000	0.003
333068.27	2033968.40	nh b12 GCP 85	3.191	3.197	-0.006	0.000	0.006
332224.50	2033056.54	nh b12 GCP 86	6.572	6.592	-0.020	0.000	0.020
337623.04	2032709.95	nh b12 GCP 87	3.000	2.994	0.006	0.000	0.006
337066.33	2032649.04	nh b12 GCP 88	1.770	1.768	0.002	0.000	0.002
336527.12	2031477.55	nh b12 GCP 89.1	4.449	4.453	-0.004	0.000	0.004
336491.88	2031724.30	nh b12 GCP 89.2	3.213	3.214	-0.001	0.000	0.001

334653.27	2032067.18	nh b12 GCP 89.3	2.902	2.904	-0.002	0.000	0.002
336148.89	2036968.79	nh b13 GCP 30	1.666	1.671	-0.005	0.000	0.005
334012.27	2039483.87	nh b13 GCP 31	2.976	2.972	0.004	0.000	0.004
334163.24	2040653.54	nh b13 GCP 33	0.869	0.870	-0.001	0.000	0.001
337386.82	2040980.52	nh b13 GCP 34.1	5.500	5.501	-0.001	0.000	0.001
339047.70	2041558.34	nh b13 GCP 34.2	1.917	1.919	-0.002	0.000	0.002
339047.70	2042337.24	nh b13 GCP 35	1.698	1.694	0.004	0.000	0.004
338206.92	2042888.79	nh b13 GCP 36	1.563	1.579	-0.016	0.000	0.016
338446.93	2043631.02	nh b13 GCP 37.1	10.766	10.747	0.019	0.000	0.019
339273.14	2043002.68	nh b13 GCP 37.2	10.003	9.967	0.036	0.001	0.036
339273.14	2044420.34	nh b13 GCP 37.3	3.538	3.547	-0.009	0.000	0.009
339524.48	2044136.42	nh b13 GCP 38.1	3.287	3.191	0.096	0.009	0.096
339524.48	2044693.35	nh b13 GCP 38.2	1.430	1.429	0.001	0.000	0.001
334527.26	2044707.53	nh b13 GCP 38.3	2.273	2.286	-0.013	0.000	0.013
338651.24	2044182.48	nh b13 GCP 39	1.399	1.403	-0.004	0.000	0.004
338556.84	2042674.86	nh b13 GCP 40	8.638	8.622	0.016	0.000	0.016
339130.53	2042811.57	nh b13 GCP 41.1	2.187	2.185	0.002	0.000	0.002
339926.35	2043365.76	nh b13 GCP 41.2	3.426	3.432	-0.006	0.000	0.006
339926.35	2043578.72	nh b13 GCP 42	2.092	2.069	0.023	0.001	0.023
340139.26	2044104.02	nh b13 GCP 43	1.914	1.906	0.008	0.000	0.008
340139.26	2043879.19	nh b13 GCP 44	1.182	1.187	-0.005	0.000	0.005
340332.18	2041995.11	nh b13 GCP 44.2	1.094	1.084	0.010	0.000	0.010
340332.18	2039625.98	nh b13 GCP 45	11.106	11.101	0.005	0.000	0.005
340498.81	2042209.65	nh b13 GCP 45.2	0.944	0.931	0.013	0.000	0.013
340498.81	2040162.52	nh b13 GCP 46	6.426	6.422	0.004	0.000	0.004
340296.37	2040709.38	nh b13 GCP 47	4.968	4.966	0.002	0.000	0.002
340296.37	2041165.29	nh b13 GCP 48.1	4.724	4.734	-0.010	0.000	0.010
334192.18	2041276.97	nh b13 GCP 48.2	5.621	5.623	-0.002	0.000	0.002
338342.43	2041445.13	nh b13 GCP 49.1	3.773	3.750	0.023	0.001	0.023
339247.43	2042383.51	nh b13 GCP 49.2	0.653	0.650	0.003	0.000	0.003
339154.97	2037617.51	nh b13 GCP 68.1	4.352	4.354	-0.002	0.000	0.002
339154.97	2037723.27	nh b13 GCP 68.2	3.276	3.275	0.001	0.000	0.001
334745.71	2037250.42	nh b13 GCP 69.11	1.637	1.634	0.003	0.000	0.003
333847.54	2037272.01	nh b13 GCP 69.12	2.188	2.177	0.011	0.000	0.011
335464.53	2039522.76	nh b13 GCP 74	5.553	5.577	-0.024	0.001	0.024
337616.14	2039111.59	nh b13 GCP 76	10.311	10.317	-0.006	0.000	0.006
338265.22	2040022.68	nh b13 GCP 77	3.729	3.726	0.003	0.000	0.003
337972.33	1999303.84	nh b2 GCP 38.2	11.498	11.496	0.002	0.000	0.002
337410.87	1994069.65	nh b2 GCP 78.2	26.525	26.534	-0.009	0.000	0.009
337043.17	1994849.94	nh b2 GCP 89	31.487	31.543	-0.056	0.003	0.056
337463.90	2000748.90	nh b3 GCP 21	25.538	25.550	-0.012	0.000	0.012
339037.35	2007621.28	nh b3 GCP 62	5.374	5.373	0.001	0.000	0.001
337877.23	2016302.85	nh b4 GCP 46	1.841	1.847	-0.006	0.000	0.006
338549.97	2016760.30	nh b4 GCP 48	1.578	1.514	0.064	0.004	0.064
339134.69	2000239.67	nh b5 GCP 1	4.057	4.068	-0.011	0.000	0.011
337736.38	2000239.67	nh b5 GCP 1.2	4.057	4.067	-0.010	0.000	0.010
336833.05	2003594.74	nh b5 GCP 10	2.609	2.589	0.020	0.000	0.020
336845.03	2011426.36	nh b5 GCP 100	1.678	1.677	0.001	0.000	0.001
336138.73	2010557.42	nh b5 GCP 101	1.843	1.841	0.002	0.000	0.002
336088.11	2012439.33	nh b5 GCP 102	1.000	0.990	0.010	0.000	0.010

335346.67	2011787.76	nh b5 GCP 103	2.589	2.503	0.086	0.007	0.086
335745.12	2010795.76	nh b5 GCP 106	5.289	5.348	-0.059	0.003	0.059
334553.16	2009101.71	nh b5 GCP 107	2.909	2.909	0.000	0.000	0.000
334552.80	2008731.54	nh b5 GCP 108	3.274	3.264	0.010	0.000	0.010
333108.85	2008250.36	nh b5 GCP 109	1.454	1.440	0.014	0.000	0.014
332542.75	2008123.76	nh b5 GCP 109.2	0.746	0.689	0.057	0.003	0.057
331704.88	2004168.85	nh b5 GCP 11	0.689	0.564	0.125	0.016	0.125
336642.08	2008007.76	nh b5 GCP 110	2.342	2.277	0.065	0.004	0.065
331911.84	2007730.90	nh b5 GCP 111	2.391	2.307	0.084	0.007	0.084
331250.77	2005524.60	nh b5 GCP 112	8.427	8.427	0.000	0.000	0.000
331084.60	2005500.96	nh b5 GCP 113	1.595	1.462	0.133	0.018	0.133
332794.86	2004512.23	nh b5 GCP 114	12.148	12.141	0.007	0.000	0.007
333707.47	2005070.37	nh b5 GCP 115	5.329	5.200	0.129	0.017	0.129
336825.20	2004510.32	nh b5 GCP 116	2.810	2.765	0.045	0.002	0.045
333832.44	2003752.31	nh b5 GCP 117	12.523	12.466	0.057	0.003	0.057
334676.06	2004020.76	nh b5 GCP 118	10.268	10.207	0.061	0.004	0.061
335255.23	2003761.11	nh b5 GCP 119	1.361	1.381	-0.020	0.000	0.020
336055.18	2004217.23	nh b5 GCP 12	3.482	3.471	0.011	0.000	0.011
335829.88	2003296.67	nh b5 GCP 120	2.102	2.105	-0.003	0.000	0.003
336532.77	2003012.50	nh b5 GCP 121	12.604	12.604	0.000	0.000	0.000
337094.70	2002740.89	nh b5 GCP 122	6.285	6.285	0.000	0.000	0.000
336561.02	2002160.76	nh b5 GCP 123.1	3.534	3.629	-0.095	0.009	0.095
339389.41	2002160.88	nh b5 GCP 123.2	3.504	3.461	0.043	0.002	0.043
339389.41	2002450.21	nh b5 GCP 124	2.719	3.064	-0.345	0.119	0.345
342243.62	2000775.70	nh b5 GCP 125	1.692	1.692	0.000	0.000	0.000
343109.01	2004734.60	nh b5 GCP 13	1.370	1.410	-0.040	0.002	0.040
342960.84	2004251.00	nh b5 GCP 14	3.244	3.162	0.082	0.007	0.082
343622.32	2005164.18	nh b5 GCP 15	7.826	7.822	0.004	0.000	0.004
343511.27	2005437.49	nh b5 GCP 16	2.149	2.143	0.006	0.000	0.006
342670.37	2006229.15	nh b5 GCP 17	2.490	2.511	-0.021	0.000	0.021
342043.60	2006005.16	nh b5 GCP 18	9.862	9.862	0.000	0.000	0.000
343718.89	2006801.62	nh b5 GCP 19	3.744	3.754	-0.010	0.000	0.010
343188.50	2001017.54	nh b5 GCP 2	3.550	3.450	0.100	0.010	0.100
339809.14	2007143.12	nh b5 GCP 20	4.833	4.842	-0.009	0.000	0.009
339809.14	2007237.08	nh b5 GCP 21	4.522	4.443	0.079	0.006	0.079
342913.07	2007863.30	nh b5 GCP 22.1	2.062	1.876	0.186	0.035	0.186
342525.64	2007792.17	nh b5 GCP 22.2	0.925	0.985	-0.060	0.004	0.060
342617.61	2008535.47	nh b5 GCP 23.1	1.959	1.938	0.021	0.000	0.021
343778.26	2009395.59	nh b5 GCP 23.2	1.218	1.096	0.122	0.015	0.122
344075.27	2008904.99	nh b5 GCP 24	1.344	1.495	-0.151	0.023	0.151
343539.21	2009363.22	nh b5 GCP 25	2.106	1.992	0.114	0.013	0.114
341370.10	2009858.88	nh b5 GCP 26.1	4.605	4.624	-0.019	0.000	0.019
341370.10	2010105.47	nh b5 GCP 26.2	2.070	2.089	-0.019	0.000	0.019
344744.35	2010175.93	nh b5 GCP 27	2.618	2.470	0.148	0.022	0.148
344744.35	2010726.87	nh b5 GCP 28	2.875	2.778	0.097	0.009	0.097
343911.37	2011493.86	nh b5 GCP 29.1	3.568	3.636	-0.068	0.005	0.068
343603.27	2010915.79	nh b5 GCP 29.2	1.930	1.985	-0.055	0.003	0.055
343095.44	2001487.72	nh b5 GCP 3	4.531	4.499	0.032	0.001	0.032
342599.42	2012056.23	nh b5 GCP 30	7.066	7.138	-0.072	0.005	0.072
340892.40	2013490.14	nh b5 GCP 32	1.453	1.479	-0.026	0.001	0.026

340860.29	2013365.42	nh b5 GCP 33	2.844	2.960	-0.116	0.013	0.116
341305.89	2016765.66	nh b5 GCP 39	2.458	2.341	0.117	0.014	0.117
341735.32	2001958.76	nh b5 GCP 4	2.011	2.041	-0.030	0.001	0.030
340757.47	2016152.56	nh b5 GCP 41	6.719	6.688	0.031	0.001	0.031
339481.75	2001663.61	nh b5 GCP 5	3.698	3.659	0.039	0.002	0.039
340054.04	2014489.51	nh b5 GCP 53	1.571	1.572	-0.001	0.000	0.001
338924.68	2013837.48	nh b5 GCP 54	1.605	1.607	-0.002	0.000	0.002
339444.67	2013711.29	nh b5 GCP 55	1.224	1.221	0.003	0.000	0.003
339071.11	2013815.86	nh b5 GCP 58	1.590	1.592	-0.002	0.000	0.002
338615.23	2014665.80	nh b5 GCP 59	1.980	1.979	0.001	0.000	0.001
338432.96	2002362.97	nh b5 GCP 6	6.299	6.207	0.092	0.008	0.092
339913.10	2015096.16	nh b5 GCP 61	2.310	2.310	0.000	0.000	0.000
339622.09	2014552.87	nh b5 GCP 62	1.364	1.303	0.061	0.004	0.061
339681.27	2015930.27	nh b5 GCP 65	3.427	3.410	0.017	0.000	0.017
340420.61	2014593.38	nh b5 GCP 67	13.381	13.445	-0.064	0.004	0.064
342198.91	2013767.17	nh b5 GCP 68	6.965	6.977	-0.012	0.000	0.012
342198.91	2014593.38	nh b5 GCP 68.2	13.380	13.445	-0.065	0.004	0.065
338960.74	2013549.81	nh b5 GCP 69	2.440	2.423	0.017	0.000	0.017
338816.26	2002792.49	nh b5 GCP 7	2.671	2.653	0.018	0.000	0.018
338131.49	2013505.47	nh b5 GCP 70	2.083	2.125	-0.042	0.002	0.042
342283.32	2013284.68	nh b5 GCP 71	2.376	2.382	-0.006	0.000	0.006
340861.08	2012825.31	nh b5 GCP 72	2.207	2.212	-0.005	0.000	0.005
339520.17	2013290.78	nh b5 GCP 73	3.253	3.213	0.040	0.002	0.040
340449.10	2014019.91	nh b5 GCP 74	1.988	1.938	0.050	0.003	0.050
341033.80	2012959.63	nh b5 GCP 75	4.293	4.338	-0.045	0.002	0.045
340518.03	2012925.37	nh b5 GCP 76	1.847	1.862	-0.015	0.000	0.015
341157.53	2012193.62	nh b5 GCP 77	3.903	3.910	-0.007	0.000	0.007
341845.57	2012456.03	nh b5 GCP 79	1.037	0.977	0.060	0.004	0.060
342229.01	2003234.21	nh b5 GCP 8	1.865	1.740	0.125	0.016	0.125
341667.27	2011792.85	nh b5 GCP 80	1.528	1.524	0.004	0.000	0.004
341967.16	2011703.69	nh b5 GCP 82	1.242	1.225	0.017	0.000	0.017
341479.13	2011085.29	nh b5 GCP 83	1.368	1.334	0.034	0.001	0.034
340827.09	2011079.73	nh b5 GCP 83.2	1.417	1.469	-0.052	0.003	0.052
340239.28	2010947.88	nh b5 GCP 84	3.119	3.120	-0.001	0.000	0.001
340988.99	2010574.78	nh b5 GCP 85	3.025	3.046	-0.021	0.000	0.021
340356.24	2010245.87	nh b5 GCP 87	0.959	0.966	-0.007	0.000	0.007
340826.28	2009787.51	nh b5 GCP 88	1.498	1.406	0.092	0.008	0.092
345355.55	2009651.34	nh b5 GCP 89	3.478	3.542	-0.064	0.004	0.064
345355.55	2003321.96	nh b5 GCP 9	3.811	3.814	-0.003	0.000	0.003
350596.40	2009355.00	nh b5 GCP 90	2.214	2.214	0.000	0.000	0.000
351185.33	2008862.35	nh b5 GCP 91	1.609	1.587	0.022	0.000	0.022
350600.75	2013006.24	nh b5 GCP 92	1.688	1.680	0.008	0.000	0.008
351126.04	2012421.22	nh b5 GCP 93	1.477	1.478	-0.001	0.000	0.001
351862.38	2012460.76	nh b5 GCP 94	1.702	1.701	0.001	0.000	0.001
352247.05	2012080.92	nh b5 GCP 95	0.721	0.673	0.048	0.002	0.048
352057.66	2011858.92	nh b5 GCP 96	2.456	2.457	-0.001	0.000	0.001
351632.82	2011257.98	nh b5 GCP 97	2.489	2.489	0.000	0.000	0.000
352049.93	2010752.91	nh b5 GCP 98	4.050	4.017	0.033	0.001	0.033
351995.32	2009948.04	nh b5 GCP 99	6.037	6.039	-0.002	0.000	0.002
351400.61	2010769.02	nh b5 SH 1	4.532	4.542	-0.010	0.000	0.010

351789.12	2010324.59	nh b5 SH 2	6.845	6.845	0.000	0.000	0.000
351529.72	2000103.66	nh b6 GCP 1	10.450	10.428	0.022	0.000	0.022
350915.81	1998971.98	nh b6 GCP 10	6.616	6.605	0.011	0.000	0.011
350326.79	1998513.99	nh b6 GCP 11	9.042	9.042	0.000	0.000	0.000
350841.23	1998619.09	nh b6 GCP 12	3.666	3.666	0.000	0.000	0.000
349948.94	1999290.35	nh b6 GCP 13	8.743	8.568	0.175	0.031	0.175
350108.75	1999290.36	nh b6 GCP 14.2	8.743	8.556	0.187	0.035	0.187
349485.57	1999946.04	nh b6 GCP 14.3	6.522	6.300	0.222	0.049	0.222
350184.44	2000432.87	nh b6 GCP 15	13.394	13.361	0.033	0.001	0.033
349197.12	2000432.86	nh b6 GCP 15.2	13.394	13.353	0.041	0.002	0.041
349568.27	1999785.08	nh b6 GCP 16	16.508	16.456	0.052	0.003	0.052
349112.93	1999377.02	nh b6 GCP 17	7.520	7.507	0.013	0.000	0.013
349156.93	2000299.42	nh b6 GCP 18	10.409	10.283	0.126	0.016	0.126
349170.11	2000624.47	nh b6 GCP 19	15.376	15.386	-0.010	0.000	0.010
350089.36	2001177.21	nh b6 GCP 20	14.819	14.818	0.001	0.000	0.001
348753.22	2000604.42	nh b6 GCP 21	6.318	6.374	-0.056	0.003	0.056
348217.64	2001561.75	nh b6 GCP 22	11.303	11.280	0.023	0.001	0.023
345078.08	2001517.08	nh b6 GCP 23	6.768	6.768	0.000	0.000	0.000
345418.78	2000683.71	nh b6 GCP 24	5.445	5.335	0.110	0.012	0.110
346105.43	2001339.03	nh b6 GCP 25	6.433	6.430	0.003	0.000	0.003
346443.23	2002481.73	nh b6 GCP 26	5.179	5.172	0.007	0.000	0.007
347519.27	2001724.14	nh b6 GCP 27	7.803	7.840	-0.037	0.001	0.037
348364.83	2002243.26	nh b6 GCP 28	8.516	8.466	0.050	0.003	0.050
348224.56	2001465.43	nh b6 GCP 29	11.056	11.243	-0.187	0.035	0.187
331010.68	2000096.53	nh b6 GCP 3	8.326	8.309	0.017	0.000	0.017
326938.33	2001152.14	nh b6 GCP 31	5.737	5.741	-0.004	0.000	0.004
323553.46	2002059.19	nh b6 GCP 32	7.999	8.016	-0.017	0.000	0.017
323553.46	2002552.88	nh b6 GCP 33	4.517	4.509	0.008	0.000	0.008
328091.75	2001898.39	nh b6 GCP 34	7.552	7.545	0.007	0.000	0.007
325761.06	2001271.56	nh b6 GCP 35	9.663	9.652	0.011	0.000	0.011
330150.96	2000969.38	nh b6 GCP 36	6.258	6.262	-0.004	0.000	0.004
330304.96	2001460.41	nh b6 GCP 37	8.818	8.770	0.048	0.002	0.048
336528.26	2000850.22	nh b6 GCP 37.2	7.923	7.852	0.071	0.005	0.071
336528.26	2002320.60	nh b6 GCP 38	12.989	12.977	0.012	0.000	0.012
336528.26	2001260.09	nh b6 GCP 39	16.818	16.824	-0.006	0.000	0.006
336528.26	2000104.20	nh b6 GCP 4	6.141	6.119	0.022	0.000	0.022
336528.26	2001814.55	nh b6 GCP 40	13.835	13.835	0.000	0.000	0.000
336528.26	2002088.42	nh b6 GCP 41	13.229	13.228	0.001	0.000	0.001
336942.75	2002658.10	nh b6 GCP 42.1	8.836	8.783	0.053	0.003	0.053
334704.57	2003166.00	nh b6 GCP 42.2	3.437	3.417	0.020	0.000	0.020
334626.66	2002812.83	nh b6 GCP 43	13.543	13.544	-0.001	0.000	0.001
334188.36	2003017.10	nh b6 GCP 44	12.829	12.820	0.009	0.000	0.009
334188.36	2003497.47	nh b6 GCP 45	11.553	11.502	0.051	0.003	0.051
333952.97	2003508.99	nh b6 GCP 46	7.453	7.436	0.017	0.000	0.017
333952.97	2003588.75	nh b6 GCP 47	2.329	2.338	-0.009	0.000	0.009
333308.84	2003588.75	nh b6 GCP 47.2	2.329	2.335	-0.006	0.000	0.006
333308.84	2004221.29	nh b6 GCP 48	5.040	5.032	0.008	0.000	0.008
335798.45	2004222.98	nh b6 GCP 48.2	5.326	5.341	-0.015	0.000	0.015
336791.10	2004385.89	nh b6 GCP 49	2.200	2.205	-0.005	0.000	0.005
337655.86	2000301.57	nh b6 GCP 5	9.305	9.293	0.012	0.000	0.012

338052.21	2004790.76	nh b6 GCP 50	3.974	4.021	-0.047	0.002	0.047
337172.30	2004260.92	nh b6 GCP 51	8.761	8.763	-0.002	0.000	0.002
336353.71	2003673.52	nh b6 GCP 52	11.462	11.463	-0.001	0.000	0.001
336943.97	2003545.34	nh b6 GCP 53	14.513	14.492	0.021	0.000	0.021
334766.84	2002684.88	nh b6 GCP 54	15.161	15.166	-0.005	0.000	0.005
335823.25	2005076.70	nh b6 GCP 55	4.503	4.343	0.160	0.026	0.160
334768.59	2005076.70	nh b6 GCP 55 B2	4.504	4.365	0.139	0.019	0.139
335560.09	2005233.93	nh b6 GCP 56	5.452	5.427	0.025	0.001	0.025
335863.56	2005234.00	nh b6 GCP 56 B2	5.454	5.407	0.047	0.002	0.047
334771.02	2004736.51	nh b6 GCP 57	12.382	12.366	0.016	0.000	0.016
334986.87	2004288.71	nh b6 GCP 59	9.771	9.598	0.173	0.030	0.173
335881.61	1999528.27	nh b6 GCP 6	11.786	11.709	0.077	0.006	0.077
337981.68	2004009.87	nh b6 GCP 60	12.232	11.996	0.236	0.056	0.236
335576.97	2003160.61	nh b6 GCP 62	14.304	14.263	0.041	0.002	0.041
334827.02	2002288.81	nh b6 GCP 63	15.948	16.003	-0.055	0.003	0.055
335473.98	2003138.72	nh b6 GCP 64	12.852	12.833	0.019	0.000	0.019
335966.10	2003402.35	nh b6 GCP 65	10.176	10.119	0.057	0.003	0.057
335968.12	2003021.78	nh b6 GCP 66	6.053	6.024	0.029	0.001	0.029
336258.90	2002725.79	nh b6 GCP 67	10.238	10.241	-0.003	0.000	0.003
335918.43	2002278.76	nh b6 GCP 68	13.008	12.996	0.012	0.000	0.012
337626.20	2002173.12	nh b6 GCP 69	3.958	3.897	0.061	0.004	0.061
338693.57	1999329.43	nh b6 GCP 7	9.135	9.133	0.002	0.000	0.002
338693.57	2001752.31	nh b6 GCP 70	15.548	15.548	0.000	0.000	0.000
339026.08	2005740.88	nh b6 GCP 71.1	2.864	2.736	0.128	0.016	0.128
339026.08	2006374.18	nh b6 GCP 73	8.673	8.616	0.057	0.003	0.057
338206.62	2005606.82	nh b6 GCP 74	8.138	8.159	-0.021	0.000	0.021
338381.06	2004781.89	nh b6 GCP 79	8.664	8.553	0.111	0.012	0.111
338820.25	2000223.08	nh b6 GCP 8.1	8.746	8.654	0.092	0.008	0.092
338570.63	2000364.87	nh b6 GCP 8.2	9.526	9.526	0.000	0.000	0.000
337006.77	2003845.56	nh b6 GCP 80	6.670	6.690	-0.020	0.000	0.020
337006.77	2003086.97	nh b6 GCP 81	3.107	3.082	0.025	0.001	0.025
339154.16	2003168.11	nh b6 GCP 82	2.969	2.947	0.022	0.000	0.022
339866.47	2003194.94	nh b6 GCP 83	3.544	3.524	0.020	0.000	0.020
339866.47	2003097.57	nh b6 GCP 84	4.245	4.350	-0.105	0.011	0.105
339542.69	1999536.16	nh b6 GCP 9	11.965	11.954	0.011	0.000	0.011
338463.95	1999412.53	nh b7 GCP 13	10.041	9.969	0.072	0.005	0.072
339373.50	1999068.87	nh b7 GCP 17.1	8.716	8.720	-0.004	0.000	0.004
339222.46	1998526.02	nh b7 GCP 18.1	9.091	8.706	0.385	0.148	0.385
339979.71	1998381.13	nh b7 GCP 18.2	6.953	7.038	-0.085	0.007	0.085
339979.71	2000160.13	nh b7 GCP 3	3.926	3.926	0.000	0.000	0.000
340039.75	1993697.21	nh b7 GCP 39.3	11.798	11.798	0.000	0.000	0.000
340039.75	2000146.28	nh b7 GCP 4	9.037	9.069	-0.032	0.001	0.032
339895.21	1994204.46	nh b7 GCP 40	8.597	8.566	0.031	0.001	0.031
339283.89	1993882.85	nh b7 GCP 40.1	6.962	6.964	-0.002	0.000	0.002
340483.30	1993882.85	nh b7 GCP 40.2	6.962	6.966	-0.004	0.000	0.004
340483.30	1994726.95	nh b7 GCP 41	10.215	10.356	-0.141	0.020	0.141
340069.76	1995114.94	nh b7 GCP 43	7.325	7.237	0.088	0.008	0.088
340069.76	1994529.88	nh b7 GCP 43.2	7.063	7.063	0.000	0.000	0.000
339673.51	1994950.34	nh b7 GCP 44	3.191	3.191	0.000	0.000	0.000
339673.51	1995801.39	nh b7 GCP 45	4.132	4.079	0.053	0.003	0.053

339245.87	1996448.77	nh b7 GCP 46.1	7.572	7.537	0.035	0.001	0.035
336546.21	1996297.87	nh b7 GCP 46.2	3.773	3.800	-0.027	0.001	0.027
340072.01	1997099.27	nh b7 GCP 47.1	8.175	8.204	-0.029	0.001	0.029
340072.01	1997005.52	nh b7 GCP 47.2	9.918	9.862	0.056	0.003	0.056
340222.26	1996755.93	nh b7 GCP 48	9.012	8.958	0.054	0.003	0.054
341086.11	1996755.93	nh b7 GCP 48.2	9.012	8.946	0.066	0.004	0.066
341086.11	1996637.03	nh b7 GCP 49	5.278	5.254	0.024	0.001	0.024
341353.26	1996362.34	nh b7 GCP 50	9.689	9.601	0.088	0.008	0.088
336963.20	1995628.29	nh b7 GCP 53.1	5.630	5.631	-0.001	0.000	0.001
342643.24	1995492.00	nh b7 GCP 53.2	3.616	3.614	0.002	0.000	0.002
337409.14	1996495.21	nh b7 GCP 53.4	6.501	6.502	-0.001	0.000	0.001
337409.14	1996969.08	nh b7 GCP 54	5.401	5.393	0.008	0.000	0.008
338731.36	1997661.11	nh b7 GCP 56	7.939	7.807	0.132	0.017	0.132
338928.80	1998252.89	nh b7 GCP 57	10.782	10.817	-0.035	0.001	0.035
339328.10	1997852.64	nh b7 GCP 58	10.611	10.543	0.068	0.005	0.068
338089.88	1998103.36	nh b7 GCP 59	4.411	4.391	0.020	0.000	0.020
336700.80	2000219.03	nh b7 GCP 7	8.460	8.473	-0.013	0.000	0.013
337844.09	1998613.90	nh b7 GCP 8	10.197	10.108	0.089	0.008	0.089
337844.09	2000817.31	nh b7 GCP 9	6.558	6.591	-0.033	0.001	0.033
336098.20	1999691.16	nh b7 GCP 9.2	8.141	8.117	0.024	0.001	0.024
335877.54	2005439.00	nh b8 GCP 1	1.376	1.479	-0.103	0.011	0.103
338730.14	2004790.28	nh b8 GCP 10	15.494	15.491	0.003	0.000	0.003
334794.42	2005330.63	nh b8 GCP 11	12.442	12.465	-0.023	0.001	0.023
334794.42	2005758.81	nh b8 GCP 12	14.215	14.198	0.017	0.000	0.017
334794.42	2006525.43	nh b8 GCP 13	14.169	14.187	-0.018	0.000	0.018
334343.89	2007093.98	nh b8 GCP 14	12.691	12.685	0.006	0.000	0.006
334343.89	2007024.04	nh b8 GCP 15	14.473	14.451	0.022	0.000	0.022
334794.41	2004363.44	nh b8 GCP 15.1	13.752	13.760	-0.008	0.000	0.008
334794.41	2004045.90	nh b8 GCP 15.2	8.031	8.003	0.028	0.001	0.028
334794.41	2005259.11	nh b8 GCP 16	14.484	14.440	0.044	0.002	0.044
335034.33	2005345.80	nh b8 GCP 17	3.724	3.630	0.094	0.009	0.094
337279.59	2005942.22	nh b8 GCP 18	10.532	10.491	0.041	0.002	0.041
335705.39	2006757.55	nh b8 GCP 19	6.842	6.789	0.053	0.003	0.053
336359.09	2005372.90	nh b8 GCP 2	1.710	1.723	-0.013	0.000	0.013
336812.90	2006809.27	nh b8 GCP 20	1.616	1.615	0.001	0.000	0.001
337461.97	2003700.68	nh b8 GCP 21	11.809	11.807	0.002	0.000	0.002
336815.62	2002048.94	nh b8 GCP 22	13.519	13.333	0.186	0.035	0.186
338174.39	2003023.79	nh b8 GCP 23	12.994	13.052	-0.058	0.003	0.058
338705.66	2002940.96	nh b8 GCP 24	11.985	11.895	0.090	0.008	0.090
339275.82	2003617.11	nh b8 GCP 25	15.684	15.686	-0.002	0.000	0.002
337693.30	2003988.96	nh b8 GCP 26	14.423	14.368	0.055	0.003	0.055
336714.41	2004203.49	nh b8 GCP 27	14.363	14.381	-0.018	0.000	0.018
338701.10	2004738.78	nh b8 GCP 28	3.420	3.327	0.093	0.009	0.093
337313.88	2004410.15	nh b8 GCP 29	13.232	13.225	0.007	0.000	0.007
338058.58	2005751.11	nh b8 GCP 3	2.161	2.145	0.016	0.000	0.016
337092.43	2005056.82	nh b8 GCP 30	12.965	12.976	-0.011	0.000	0.011
337086.62	2005419.09	nh b8 GCP 31	13.351	13.312	0.039	0.002	0.039
337553.48	2005889.35	nh b8 GCP 32	1.488	1.470	0.018	0.000	0.018
337732.14	2005945.43	nh b8 GCP 33	10.768	10.762	0.006	0.000	0.006
336902.41	2006170.00	nh b8 GCP 34	12.621	12.613	0.008	0.000	0.008

336846.31	2006721.59	nh b8 GCP 35	12.093	12.072	0.021	0.000	0.021
337450.79	2007502.84	nh b8 GCP 36	5.172	5.058	0.114	0.013	0.114
337636.33	2007349.78	nh b8 GCP 37	9.928	9.733	0.195	0.038	0.195
338121.50	2007670.31	nh b8 GCP 38	11.326	11.224	0.102	0.010	0.102
337988.30	2011626.87	nh b8 GCP 39	0.823	0.823	0.000	0.000	0.000
334348.09	2005642.12	nh b8 GCP 4	8.854	8.831	0.023	0.001	0.023
334348.09	2008094.60	nh b8 GCP 40	12.941	12.934	0.007	0.000	0.007
334883.22	2008747.94	nh b8 GCP 41	10.865	10.960	-0.095	0.009	0.095
335746.52	2009488.59	nh b8 GCP 42	5.954	5.954	0.000	0.000	0.000
336661.70	2008168.85	nh b8 GCP 43	6.969	6.906	0.063	0.004	0.063
335649.23	2011657.00	nh b8 GCP 44.1	8.211	8.239	-0.028	0.001	0.028
336152.57	2011222.51	nh b8 GCP 44.2	3.975	3.990	-0.015	0.000	0.015
335477.39	2010501.89	nh b8 GCP 44.3	13.165	13.150	0.015	0.000	0.015
335663.31	2009983.38	nh b8 GCP 44.4	2.385	2.297	0.088	0.008	0.088
335472.23	2012233.49	nh b8 GCP 45	4.633	4.632	0.001	0.000	0.001
333148.27	2012776.82	nh b8 GCP 48	1.817	1.776	0.041	0.002	0.041
337398.26	2013660.49	nh b8 GCP 49	2.483	2.475	0.008	0.000	0.008
337398.26	2006310.16	nh b8 GCP 5	11.471	11.457	0.014	0.000	0.014
341880.97	2011722.09	nh b8 GCP 50	8.822	8.623	0.199	0.040	0.199
341880.97	2011701.64	nh b8 GCP 51	9.101	9.037	0.064	0.004	0.064
343552.72	2011014.35	nh b8 GCP 53	10.755	10.749	0.006	0.000	0.006
343552.72	2010517.49	nh b8 GCP 54	11.917	11.912	0.005	0.000	0.005
344480.93	2010460.27	nh b8 GCP 55	14.367	14.397	-0.030	0.001	0.030
344480.93	2009428.20	nh b8 GCP 56.1	11.935	11.921	0.014	0.000	0.014
342587.01	2009581.94	nh b8 GCP 56.2	8.515	8.559	-0.044	0.002	0.044
342587.00	2009920.71	nh b8 GCP 57	9.798	9.760	0.038	0.001	0.038
342045.99	2009940.83	nh b8 GCP 58.1	9.221	8.986	0.235	0.055	0.235
342753.96	2009850.72	nh b8 GCP 58.2	12.928	12.866	0.062	0.004	0.062
342753.95	2009044.37	nh b8 GCP 59	10.874	10.880	-0.006	0.000	0.006
342923.52	2007062.93	nh b8 GCP 6	12.970	12.976	-0.006	0.000	0.006
343416.28	2008657.00	nh b8 GCP 60	13.313	13.309	0.004	0.000	0.004
343671.57	2009075.36	nh b8 GCP 61	7.846	7.819	0.027	0.001	0.027
344356.37	2008438.82	nh b8 GCP 62	1.682	1.607	0.075	0.006	0.075
345033.04	2008069.81	nh b8 GCP 63	12.719	12.722	-0.003	0.000	0.003
345636.72	2010034.56	nh b8 GCP 64	14.587	14.616	-0.029	0.001	0.029
345746.41	2005003.44	nh b8 GCP 7	12.375	12.384	-0.009	0.000	0.009
346498.81	2006373.97	nh b8 GCP 8	14.552	14.551	0.001	0.000	0.001
337414.34	2006141.02	nh b8 GCP 83	10.338	10.342	-0.004	0.000	0.004
338009.56	2006626.21	nh b8 GCP 85	5.639	5.662	-0.023	0.001	0.023
338699.43	2006365.38	nh b8 GCP 86	0.885	0.881	0.004	0.000	0.004
338590.74	2004561.65	nh b8 GCP 9	12.006	12.017	-0.011	0.000	0.011
339402.74	2015850.44	nh b9 GCP 100	0.699	0.799	-0.100	0.010	0.100
339417.75	2016489.17	nh b9 GCP 101	3.111	3.079	0.032	0.001	0.032
338163.28	2018707.77	nh b9 GCP 105	8.930	8.925	0.005	0.000	0.005
338163.28	2021557.37	nh b9 GCP 109	1.481	1.526	-0.045	0.002	0.045
340273.55	2020421.49	nh b9 GCP 111	4.024	4.026	-0.002	0.000	0.002
340065.68	2019708.46	nh b9 GCP 112	1.959	1.967	-0.008	0.000	0.008
340468.75	2019048.52	nh b9 GCP 113	1.634	1.621	0.013	0.000	0.013
340828.04	2018742.14	nh b9 GCP 114	1.950	1.945	0.005	0.000	0.005
341401.50	2019514.13	nh b9 GCP 115	2.015	2.014	0.001	0.000	0.001

341015.85	2018221.36	nh b9 GCP 119	5.325	5.090	0.235	0.055	0.235
342158.91	2017691.21	nh b9 GCP 122	4.630	4.674	-0.044	0.002	0.044
342400.83	2016940.14	nh b9 GCP 123	1.131	0.773	0.358	0.128	0.358
342701.82	2012175.31	nh b9 GCP 91	0.679	0.686	-0.007	0.000	0.007
343277.49	2013404.16	nh b9 GCP 93	0.778	0.787	-0.009	0.000	0.009
338898.60	2013723.41	nh b9 GCP 94	1.401	1.401	0.000	0.000	0.000
343976.16	2014296.78	nh b9 GCP 96	1.530	1.520	0.010	0.000	0.010
341767.71	2015080.98	nh b9 GCP 98	2.082	2.058	0.024	0.001	0.024
341445.50	2015482.04	nh b9 GCP 99	3.802	3.801	0.001	0.000	0.001
340943.30	1997490.72	nh GCP 1	8.908	8.914	-0.006	0.000	0.006
342093.95	1994895.25	nh GCP 11	11.415	11.419	-0.004	0.000	0.004
342564.80	1993899.26	nh GCP 12	9.447	9.456	-0.009	0.000	0.009
342249.88	1993993.94	nh GCP 13	8.956	8.947	0.009	0.000	0.009
341704.55	1996593.00	nh GCP 14	13.248	13.240	0.008	0.000	0.008
340906.75	1996136.48	nh GCP 15	10.020	10.018	0.002	0.000	0.002
340906.75	1996136.48	nh GCP 15.1	10.020	10.022	-0.002	0.000	0.002
341385.99	1996692.98	nh GCP 16	8.349	8.355	-0.006	0.000	0.006
341347.18	1997177.06	nh GCP 17	7.206	7.172	0.034	0.001	0.034
340949.73	1997284.49	nh GCP 18	8.789	8.779	0.010	0.000	0.010
339913.95	1997873.50	nh GCP 19	16.052	16.068	-0.016	0.000	0.016
341346.97	1997089.32	nh GCP 20	15.755	15.763	-0.008	0.000	0.008
342327.30	1996290.30	nh GCP 21	10.919	10.918	0.001	0.000	0.001
343086.54	1995583.82	nh GCP 22	11.196	11.200	-0.004	0.000	0.004
343915.53	1995807.81	nh GCP 24	17.904	17.918	-0.014	0.000	0.014
343924.51	1996484.88	nh GCP 25	19.382	19.380	0.002	0.000	0.002
344020.63	1997207.11	nh GCP 26	27.456	27.452	0.004	0.000	0.004
342412.00	1995395.14	nh GCP 27	30.397	30.402	-0.005	0.000	0.005
342412.00	1994652.17	nh GCP 28	33.147	33.141	0.006	0.000	0.006
342411.94	1994508.79	nh GCP 28.2	19.115	19.105	0.010	0.000	0.010
342411.94	1994204.61	nh GCP 28.3	20.383	20.381	0.002	0.000	0.002
343320.51	1996682.05	nh GCP 29.1	21.983	21.990	-0.007	0.000	0.007
343320.51	1997050.23	nh GCP 3	12.323	12.317	0.006	0.000	0.006
343320.43	1995211.05	nh GCP 31	31.015	30.989	0.026	0.001	0.026
343320.43	1994955.30	nh GCP 31.2	28.366	28.352	0.014	0.000	0.014
344014.88	1995835.64	nh GCP 32	32.267	32.261	0.006	0.000	0.006
344014.88	1996439.03	nh GCP 32.2	29.062	29.057	0.005	0.000	0.005
343222.26	1997293.23	nh GCP 33	21.683	21.669	0.014	0.000	0.014
339674.36	1997001.86	nh GCP 34	24.221	24.219	0.002	0.000	0.002
339674.36	1997656.45	nh GCP 35	20.713	20.723	-0.010	0.000	0.010
344911.31	1998097.25	nh GCP 36	26.812	26.824	-0.012	0.000	0.012
345813.92	1998840.90	nh GCP 37	22.721	22.720	0.001	0.000	0.001
345813.92	1998328.70	nh GCP 37.2	27.296	27.257	0.039	0.002	0.039
339301.60	1998963.60	nh GCP 38.1	18.605	18.613	-0.008	0.000	0.008
344693.22	1998213.22	nh GCP 39	27.251	27.256	-0.005	0.000	0.005
344542.23	1996420.60	nh GCP 4	10.096	10.096	0.000	0.000	0.000
345482.23	1998431.07	nh GCP 40	20.812	20.811	0.001	0.000	0.001
346330.54	1998663.88	nh GCP 41	9.591	9.578	0.013	0.000	0.013
346330.54	1999276.28	nh GCP 43	9.134	9.144	-0.010	0.000	0.010
346799.69	2000178.02	nh GCP 44	13.632	13.659	-0.027	0.001	0.027
346799.69	2000177.95	nh GCP 44.1	13.630	13.627	0.003	0.000	0.003

346321.91	2000090.76	nh GCP 45	7.803	7.714	0.089	0.008	0.089
345889.62	1999667.98	nh GCP 46	17.636	17.537	0.099	0.010	0.099
346966.25	1999869.00	nh GCP 47	22.291	22.241	0.050	0.003	0.050
340542.36	2000053.02	nh GCP 48	24.020	24.032	-0.012	0.000	0.012
340542.36	1999285.62	nh GCP 49	26.146	26.111	0.035	0.001	0.035
347647.94	1995755.89	nh GCP 5	9.537	9.537	0.000	0.000	0.000
347647.94	1998513.79	nh GCP 50	21.048	20.999	0.049	0.002	0.049
340420.39	1999869.71	nh GCP 51	22.300	22.357	-0.057	0.003	0.057
340420.39	1998281.30	nh GCP 51.1	17.970	17.971	-0.001	0.000	0.001
339482.68	1997447.31	nh GCP 51.3	18.082	18.065	0.017	0.000	0.017
339482.68	1999871.03	nh GCP 52	22.386	22.422	-0.036	0.001	0.036
339482.68	1996171.56	nh GCP 53	31.125	31.096	0.029	0.001	0.029
339196.92	1995573.21	nh GCP 54	26.641	26.622	0.019	0.000	0.019
339196.92	1995240.87	nh GCP 55	23.555	23.549	0.006	0.000	0.006
338870.03	1994776.82	nh GCP 56	26.328	26.340	-0.012	0.000	0.012
338870.03	1994131.85	nh GCP 57	27.341	27.366	-0.025	0.001	0.025
340831.45	1993956.75	nh GCP 58	30.315	30.336	-0.021	0.000	0.021
341766.85	1993572.31	nh GCP 59	29.610	29.606	0.004	0.000	0.004
338521.96	1994824.56	nh GCP 6	12.736	12.733	0.003	0.000	0.003
338521.96	1993886.26	nh GCP 6.1	13.038	13.040	-0.002	0.000	0.002
339009.00	1994312.39	nh GCP 6.2	10.955	10.953	0.002	0.000	0.002
339515.57	1995778.94	nh GCP 7	11.366	11.359	0.007	0.000	0.007
339957.44	1995924.19	nh GCP 8	14.995	15.019	-0.024	0.001	0.024
338238.09	1995170.22	nh GCP 8.1	16.616	16.621	-0.005	0.000	0.005
338238.09	1995003.95	nh GCP 8.2	10.936	10.921	0.015	0.000	0.015
341258.57	1994155.83	nh GCP 9	15.799	15.787	0.012	0.000	0.012
340109.38	2016111.53	nh GCP b5 41	7.935	7.967	-0.032	0.001	0.032
340109.38	2012713.72	nh GCP b9 89	3.265	3.300	-0.035	0.001	0.035
341529.37	2012002.32	nh GCP b9 90	6.218	6.212	0.006	0.000	0.006

Appendix 7

The Terms of Reference