Austrian Academy of Sciences

Space Research Institute

Department of Experimental Space Research

ROSETTA-MIDAS

Enhanced Archive Data Delivery

Analysts Notebook

Issue 1.0

28/11/2018

Contents

Introduction

Operations for MIDAS have been more akin to a rover than an orbiter at times - it is very much a "look, see, respond" instrument with several weeks in-between commands being sent to the instrument and the returned outcome. As such, a brief description of the rationale behind images and operations throughout the mission would be a useful addition to allow future investigators to better understand the data and operation of an Atomic Force Microscope (AFM) in space. The following document has been compiled from notes and reports written during and after the operational phase of the mission. While the scientists involved in operations left the project prior to the compilation of this document such that interpretations or additional insight may be missing or limited, it is hoped that the information herein proves some useful information and insights into the difficulties and solutions in operating the first AFM in space, as well as additional information on MIDAS operations and images.

Typical MIDAS Scan Sequence

Scan Sequence:

The following describes the steps taken in a typical MIDAS dynamic mode scan.

- MIDAS approach to ABS
    - Move the coarse approach to a fixed position - executed before an approach to minimum to avoid some motor sticking problems and issues.
- MIDAS approach to minimum
    - Move the coarse approach to the minimum value (farthest from the sample wheel) - detected by a limit switch
- MIDAS linear stage pre-move
    - The linear stage moves the wheel (laterally) to position it in front of a cantilever, plus provide coarse X positioning
    - This "pre-move" moves the stage to a value always less than the final position so that we always approach the final position from the same side (to avoid any issues of backlash etc.)
- MIDAS linear stage move
    - The final move, as above.
- Move wheel to segment
    - Rotate the wheel so that the appropriate target is in front of the XYZ stage - selection of the exact segment provides coarse Y positioning
- MIDAS frequency scan
    - Select the cantilever and perform a resonance sweep over the (approximately known) resonance peak. This is also where the necessary operating parameters are specified. The resonance sweep starts from a defined frequency and increments this over up to 8 "cycles" of 256 points at the specified frequency step. If a resonance peak, above a given threshold, is found then MIDAS uses the fine step size to increment (positive working point) or decrement (negative working point) the frequency until the working point amplitude has been found. The working point and set points are specified as % of the peak amplitude.
- MIDAS approach to ABS
    - Actuate the coarse stage to move the XYZ stage closer to the sample prior to an "approach" (where we look for the surface).
- MIDAS scan setup
    - Specify the scan parameters - number of steps, step size etc.

- MIDAS scan retract
    - Used to ensure certain parameters are set correctly when switching between dynamic and static mode
- Approach the surface
    - Look for the sample surface - this is done by retracting the Z piezo, moving the linear stage forward slightly, and extending the Z piezo whilst monitoring the cantilever amplitude. If the surface is not found (i.e. the amplitude is NOT reduced to the set point) during this, the piezo is retracted and the linear stage moved forward a small step. This continues until the set point is triggered. This will happen at an unknown piezo extension. To ensure that we have enough dynamic range to image the sample, the piezo should start close to the centre of its range. Thus a piezo centring takes place here in which the Z piezo and approach stage are moved in small increments (and in opposite directions) until the desired piezo extension is recorded, as measured by the strain gauge.
- MIDAS scan retract
    - Same as last time
- MIDAS frequency scan
    - Repeat of the frequency scan after the approach, in case time or temperature have changed things during the approach.
- MIDAS full scan
    - Starts the full scan
    - The sequence is similar to dynamic line scans - except that the full scan command is replaced with a line scan. For contact mode scans different parameters are required - and of course no frequency sweeps, since the cantilever is not oscillating - but the overall flow is similar.

An example scan:

Scan chosen as an example:
RO-C-MIDAS-3-EXT3-SAMPLES-V1.0 IMG_1624607_1627007_157_ZS

Following the above scan sequence we can look at the event history (found in directory EVN of the DATA directory for each dataset in the archive).

AMDF023A # MIDAS approach to ABS
AMDF022A # MIDAS approach to MIN

obt	doy	sid	event	information	severity
2016-09-14 11:04:50.512865	258	42501	EvTcPktAccepted	AppToAbsPos	PROGRESS
2016-09-14 11:04:50.521867	258	42674	EvAbsApprStarted	nan	PROGRESS
2016-09-14 11:05:07.848869	258	42624	EvAbsAppPosReached	nan	PROGRESS
2016-09-14 11:07:50.555923	258	42501	EvTcPktAccepted	AppToMinPos	PROGRESS
2016-09-14 11:07:50.563933	258	42661	EvBackAppStarted	nan	PROGRESS
2016-09-14 11:08:07.619939	258	42768	EvAppLvdtOnMinPos	nan	PROGRESS

AMDF025A # MIDAS linear stage pre-move
AMDF025A # MIDAS linear stage move

obt	doy	sid	event	information	severity
2016-09-14 11:08:50.568943	258	42501	EvTcPktAccepted	LinToAbsPos	PROGRESS
2016-09-14 11:08:50.575947	258	42652	EvLinToAbsStarted	nan	PROGRESS
2016-09-14 11:09:17.259961	258	42631	EvLinPosReached	nan	PROGRESS
2016-09-14 11:12:50.628027	258	42501	EvTcPktAccepted	LinToAbsPos	PROGRESS
2016-09-14 11:12:50.634024	258	42652	EvLinToAbsStarted	nan	PROGRESS
2016-09-14 11:13:00.914026	258	42631	EvLinPosReached	nan	PROGRESS

AMDF020A # Move wheel to segment

obt	doy	sid	event	information	severity
2016-09-14 11:14:50.747070	258	42501	EvTcPktAccepted	MoveToSegment	PROGRESS
2016-09-14 11:14:52.502060	258	42591	EvSearchForRefPulse	nan	PROGRESS
2016-09-14 11:15:24.845073	258	42587	EvSavingTable	nan	PROGRESS
2016-09-14 11:15:25.071071	258	42592	EvSegmentFound	nan	PROGRESS

AMDF026B # MIDAS frequency scan

obt	doy	sid	event	information	severity
2016-09-14 11:20:50.746180	258	42501	EvTcPktAccepted	AutoFScan	PROGRESS
2016-09-14 11:20:51.695186	258	42641	EvFScanStarted	nan	PROGRESS
2016-09-14 11:20:52.723186	258	42642	EvFScanCycleStarted	nan	PROGRESS
2016-09-14 11:21:10.395189	258	42643	EvFScanCycleFinshed	nan	PROGRESS
2016-09-14 11:21:11.457186	258	42642	EvFScanCycleStarted	nan	PROGRESS
2016-09-14 11:21:29.169197	258	42643	EvFScanCycleFinshed	nan	PROGRESS
2016-09-14 11:21:30.225197	258	42642	EvFScanCycleStarted	nan	PROGRESS
2016-09-14 11:21:47.905195	258	42643	EvFScanCycleFinshed	nan	PROGRESS
2016-09-14 11:21:48.961195	258	42642	EvFScanCycleStarted	nan	PROGRESS
2016-09-14 11:22:06.670201	258	42643	EvFScanCycleFinshed	nan	PROGRESS
2016-09-14 11:22:07.726201	258	42642	EvFScanCycleStarted	nan	PROGRESS
2016-09-14 11:22:25.418208	258	42643	EvFScanCycleFinshed	nan	PROGRESS
2016-09-14 11:22:26.473217	258	42642	EvFScanCycleStarted	nan	PROGRESS
2016-09-14 11:22:44.181215	258	42643	EvFScanCycleFinshed	nan	PROGRESS
2016-09-14 11:22:45.237215	258	42642	EvFScanCycleStarted	nan	PROGRESS
2016-09-14 11:23:02.917229	258	42643	EvFScanCycleFinshed	nan	PROGRESS
2016-09-14 11:23:03.973229	258	42642	EvFScanCycleStarted	nan	PROGRESS
2016-09-14 11:23:28.222229	258	42643	EvFScanCycleFinshed	nan	PROGRESS

| 2016-09-14 11:23:28.254227 | 258 | 42645 | EvAutoFScanFinshed | nan | PROGRESS |
+----------------------------+-----+-------+---------------------+-------------+----------+

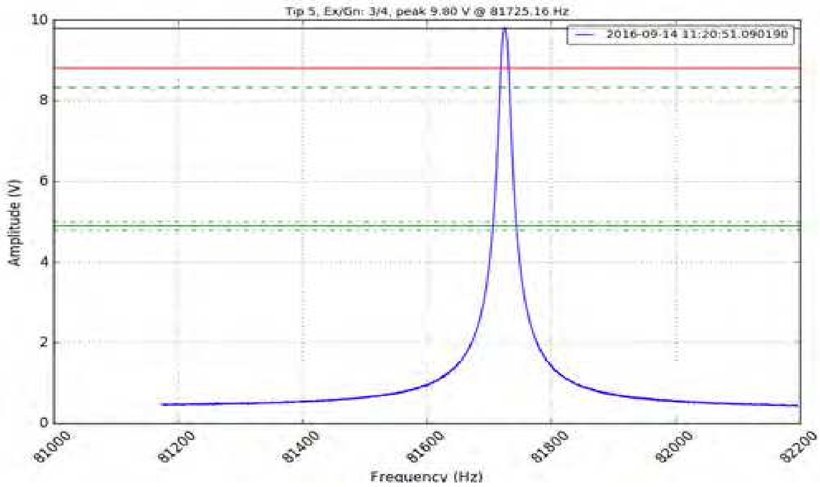
the commanding for this sequence was the following:

```
MD_TARGET_EXPOSE_SCAN_SO (COUNT = 3400003) +003_04:40:50 MIDAS *
AMDF026B ( \ # MIDAS frequency scan
        VMDDC002 = 0 \              # SelCantBlockX
        VMDDC102 = 4 \              # SelCantX
        VMDD7082 = REL_ON [ENG] \   # CantBlock1Power
        VMDD70A2 = REL_ON [ENG] \   # CantBlock2Power
        VMDD20C2 = 4 \              # SetAcgain
        VMDD20E2 = 3 \              # SetExclev
        VMDD30B2 = 81150.817 [Hz] \ # SetFrequencyHi
        VMDD30C2 = 22.282 [Hz] \    # SetFrequencyLo
        VMDD3022 = 0.5 [Hz] \       # SetFStep
        VMDD3082 = 0.05 [Hz] \      # SetFStepHi
        VMDD3072 = 8 \              # SetNoOfFscans
        VMDD30A2 = -90 [%] \        # SetPercentOpAmpl
        VMDD2082 = 50 [%] \         # SetOpPointPerc
        VMDDE252 = 85 [%] \         # SetFAdjustPercPa
        VMDD20F2 = 1.0 [%] \        # SetDeltaOpPerc
        VMDD3092 = 0 \              # SetSearchAlgor
        VMDD30E2 = ON* [ENG] \      # ThresDetectOnOff
        VMDDE242 = 1.0 [V] \        # SetFSuccessAmplPar)
```

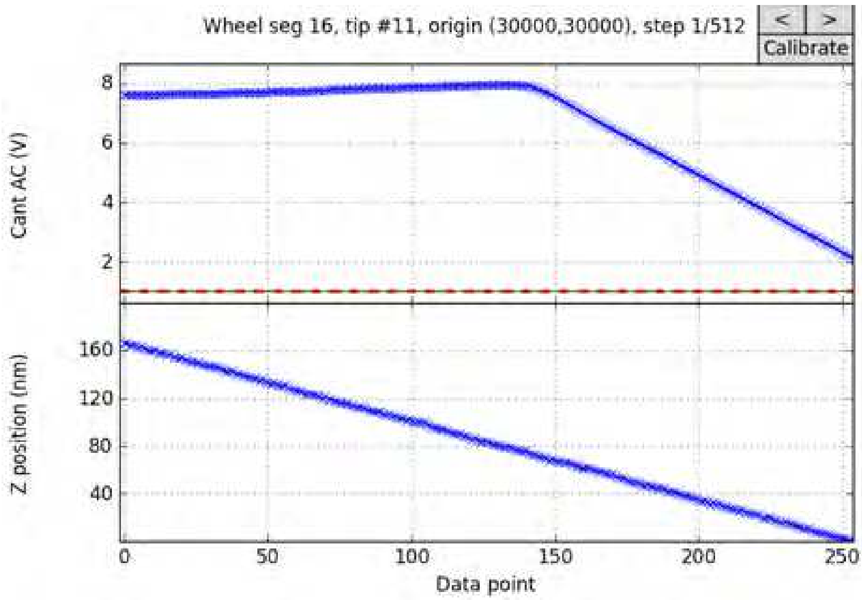
which means - use tip number 5, with AC gain 4, excitation level 3. Make a frequency sweep from 81150.8 + 22.282 Hz ~ 81173 Hz for 8 "cycles" of 256 x 0.5 Hz (i.e. sweep a range of 1024 Hz). Threshold detection is ON, with a value of 1.0 V - so the peak amplitude must be above this. If so, set the frequency to the peak and decrement in steps of 0.05 Hz until the working point of 90% of the peak amplitude is found.

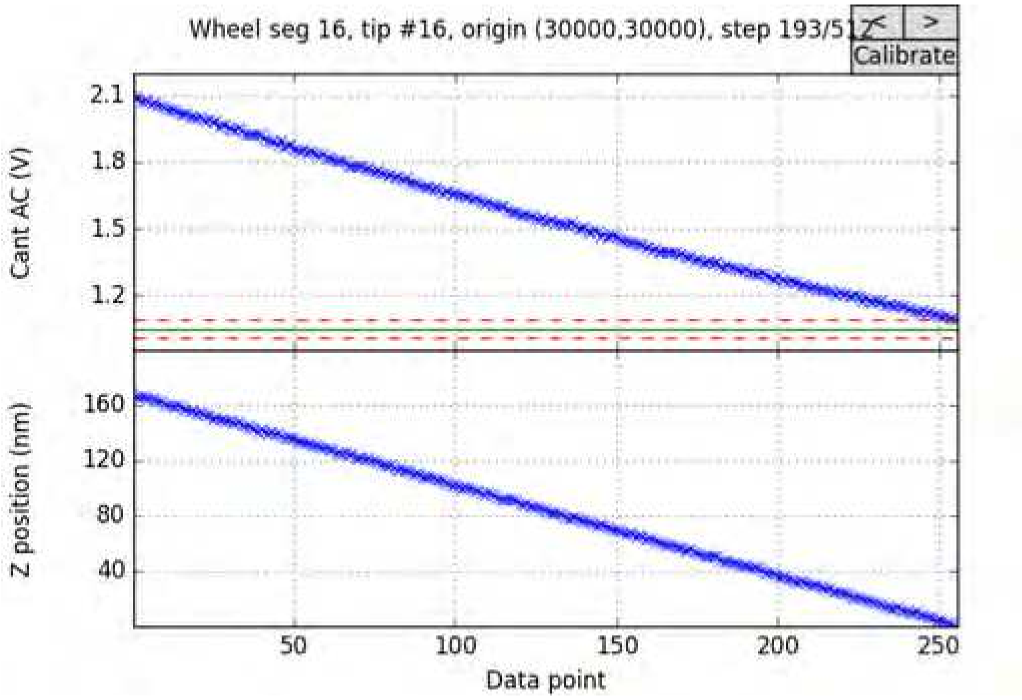
The set point is 50% (of the peak), the frequency adjust threshold is 85% of the peak - if the free amplitude drops below this, an automatic "re-tune" will be triggered. The "DeltaOpPerc" parameter sets a window around the set point into which the sampled amplitude has to fall to trigger the setpoint if in WINDOW mode (ignored if in THRESHOLD).

Check the science data packets:



To show what this actually means, consider a set of so-called "control data" (actually approach curves), these were not taken during this scan but are representative:





Both cases above show the RMS amplitude of the oscillating cantilever decreasing after the tip starts to "tap" the sample. In the first case the amplitude actually rises first, as the van der Waals forces start to act as the tip gets close to the sample and the effective spring constant of the system changes, reducing the resonance frequency and - since we're driving below resonance - increasing the amplitude. Then the tip starts to physical "touch" the sample at the farthest extent of its oscillation. As the tip is moved closer, the amplitude reduces linearly. The second case shows a case where the effect of the setpoint and window can more clearly be seen. The green line represents the setpoint, whilst the red dashed lines reflect the setpoint window; the first point to fall between these points will cause MIDAS to record this point as the surface, retract and move to the next pixel position.

AMDF023A # MIDAS approach to ABS

obt	doy	sid	event	information	severity
2016-09-14 11:23:50.791237	258	42501	EvTcPktAccepted	AppToAbsPos	PROGRESS
2016-09-14 11:23:50.799248	258	42674	EvAbsApprStarted	nan	PROGRESS
2016-09-14 11:24:30.784246	258	42624	EvAbsAppPosReached	nan	PROGRESS

AMDF035C # MIDAS scan setup

```
+---------------------------+-----+-------+----------------+---------------+----------+
|          obt              | doy |  sid  |     event      |  information  | severity |
+---------------------------+-----+-------+----------------+---------------+----------+
| 2016-09-14 11:26:50.834295 | 258 | 42501 | EvTcPktAccepted | PrepareForScan |
PROGRESS |
+---------------------------+-----+-------+----------------+---------------+----------+
```

Parameters from the command (line 5124 in the ITL):

```
MD_TARGET_EXPOSE_SCAN_SO (COUNT = 3400003) +003_04:46:50 MIDAS *
AMDF035C ( \ # MIDAS scan setup
        VMDD2012 = 43380 \      # SetXOrigin
        VMDD2022 = 32336 \      # SetYOrigin
        VMDD2032 = 224 \        # SetXNumSteps
        VMDD2042 = 32 \         # SetYNumSteps
        VMDD2052 = 10 \         # SetXStepSize
        VMDD2062 = 27 \         # SetYStepSize
        VMDD2352 = 0 [%] \      # SetOpPointPcontPerc
        VMDD2362 = 1 \          # SetPcontKc
        VMDD2382 = OFF* [ENG] \ # DispCtrlDataOnOff
        VMDD23C2 = 0 [V] \      # SetDcThreshold
        VMDD23E2 = ON* [ENG] \  # FreqAdjustOnOff
        VMDD2172 = 930 \        # SetZRetract
        VMDD2182 = 0 \          # SetZRetractMagn
        VMDD23A2 = 50 \         # SetZSettlTime
        VMDD23B2 = 50 \         # SetXySettlTime
        VMDD2192 = 4 \          # SetZStepSize
        VMDD21A2 = L_H [ENG] \  # SelScanDirXPar
        VMDD21C2 = L_H [ENG] \  # SelScanDirYPar
        VMDDE222 = 0 \          # SetZMinValPar
        VMDDE232 = 65535 \      # SetZMaxValPar
        VMDD30D2 = 2 \          # SetFAdjustScansPar)
```

Here we set the X/Y origin, number of steps and step size, Z retraction distance, settle times etc.

AMDF035B # MIDAS scan retract

obt	doy	sid	event	information	severity
2016-09-14 11:27:21.818314	258	42501	EvTcPktAccepted	RetractTip	PROGRESS

AMDF024A # Approach the surface

obt	doy	sid	event	information	severity
2016-09-14 11:27:51.058314	258	42662	EvApproachStarted	nan	PROGRESS
2016-09-14 11:32:29.922404	258	42501	EvTcPktAccepted	AcceptTimeUpdate	PROGRESS
2016-09-14 11:41:42.815590	258	42623	EvSurfaceFound	nan	PROGRESS
2016-09-14 11:41:42.815590	258	42665	EvZpiezoFineAdj	nan	PROGRESS
2016-09-14 11:43:06.790623	258	42664	EvApproachFinished	nan	PROGRESS

Note that the time update in the middle of this sequence is unrelated to the operations, but is the spacecraft sending a packet with the space craft time to all instruments.AMDF035B # MIDAS scan retract

obt	doy	sid	event	information	severity
2016-09-14 11:58:21.819914	258	42501	EvTcPktAccepted	RetractTip	PROGRESS

AMDF026B # MIDAS frequency scan

obt	doy	sid	event	information	severity
2016-09-14 11:58:51.798928	258	42641	EvFScanStarted	nan	PROGRESS
2016-09-14 11:58:52.826928	258	42642	EvFScanCycleStarted	nan	PROGRESS
2016-09-14 11:59:10.498931	258	42643	EvFScanCycleFinshed	nan	PROGRESS
2016-09-14 11:59:11.554931	258	42642	EvFScanCycleStarted	nan	PROGRESS
2016-09-14 11:59:29.272939	258	42643	EvFScanCycleFinshed	nan	PROGRESS
2016-09-14 11:59:30.327948	258	42642	EvFScanCycleStarted	nan	PROGRESS
2016-09-14 11:59:48.008953	258	42643	EvFScanCycleFinshed	nan	PROGRESS
2016-09-14 11:59:49.064953	258	42642	EvFScanCycleStarted	nan	PROGRESS
2016-09-14 12:00:06.773959	258	42643	EvFScanCycleFinshed	nan	PROGRESS
2016-09-14 12:00:07.829959	258	42642	EvFScanCycleStarted	nan	PROGRESS
2016-09-14 12:00:25.520959	258	42643	EvFScanCycleFinshed	nan	PROGRESS
2016-09-14 12:00:26.576959	258	42642	EvFScanCycleStarted	nan	PROGRESS
2016-09-14 12:00:44.284957	258	42643	EvFScanCycleFinshed	nan	PROGRESS
2016-09-14 12:00:45.340973	258	42642	EvFScanCycleStarted	nan	PROGRESS
2016-09-14 12:01:03.020971	258	42643	EvFScanCycleFinshed	nan	PROGRESS
2016-09-14 12:01:04.076971	258	42642	EvFScanCycleStarted	nan	PROGRESS
2016-09-14 12:01:28.222975	258	42643	EvFScanCycleFinshed	nan	PROGRESS
2016-09-14 12:01:28.254973	258	42645	EvAutoFScanFinshed	nan	PROGRESS

AMDF028A # MIDAS full scan

```
+----------------------------+-----+-------+--------------------+-----------------+----------+
|            obt             | doy |  sid  |       event        |   information   | severity |
+----------------------------+-----+-------+--------------------+-----------------+----------+
| 2016-09-14 12:01:50.902991 | 258 | 42656 |  EvFullScanStarted |       nan       | PROGRESS |
| 2016-09-14 12:03:03.168014 | 258 | 42611 |  EvLineScanFinished |       nan       | PROGRESS |
| 2016-09-14 12:04:14.305030 | 258 | 42611 |  EvLineScanFinished |       nan       | PROGRESS |
| 2016-09-14 12:05:25.318054 | 258 | 42611 |  EvLineScanFinished |       nan       | PROGRESS |
...
| 2016-09-14 12:26:16.211468 | 258 | 42512 |   EvScanProgress   |       nan       | PROGRESS |
...
| 2016-09-14 12:58:48.018106 | 258 | 42513 |   EvScanFinished   |       nan       | PROGRESS |
| 2016-09-14 12:58:48.019098 | 258 | 42562 |   EvDataTxStarted  |       nan       | PROGRESS |
| 2016-09-14 12:59:50.904129 | 258 | 42566 |  EvDataTxFinished  |       nan       | PROGRESS |
+----------------------------+-----+-------+--------------------+-----------------+----------+
```

A final note - this is not the full story, since there are also parameters set outside of this "typical" sequence which also affect instrument behaviour. In particular sequence AMDF034B (MD instrument setup) was expanded during the mission to set additional parameters, the most important of which are:

```
VMDDE212 = <sw_flags> \        # SetSwFlagsPar
VMDD5082 = <acreep_factor> \   # SetAcreepFactorPar
VMDD5102 = <xsteps_zoom> \     # SetXStepsZoomPar
VMDD5112 = <ysteps_zoom> \     # SetYStepsZoomPar
VMDDF122 = <mag_retr_2> \      # SetZRetractMag2Par
VMDDF132 = <mag_retr_3> \      # SetZRetractMag3Par
```

The software flags parameters contains several more parameters:

```
#define SW_FSCAN_PHASE 0 /* 1 = return phase signal during f-scan */
#define SW_MOVEZ_LASTZ 1 /* 1 = use last Z position on line feed */
#define SW_MOVEZ_ZERO 2 /* 1 = use zero position on line feed, else use Z min. position of last line */
#define SW_CALC_RETRACT 3 /* 1 = calculate z retraction from X/Y */

#define SW_LSCAN_FULL 4 /* 1 = Tx line scan data during fullscan */
#define SW_CDATA_FULL 5 /* 1 = Tx control data during fullscan */
#define SW_CDATA_RETR 6 /* 1 = Tx control data from retraction */
#define SW_ANTI_CREEP 7 /* 1 = anti-creep scan before fullscan */

#define SW_AUTO_EXP 8 /* 1 = enable auto-exposure mode */

#define SW_ACREEP_FULL 12 /* 1 = Tx anti-creep lines during fullscan */
#define SW_MAGN_PHASE 13 /* 1 = phase signal at magnetic positions */
```

Use of Tips

Tip imaging was performed when the imaging quality of a given tip became suspect, or after instrument anomalies that may have resulted in unwanted tip/sample interactions.

The document MID_TIP_IMAGES.pdf provides a list and all images of tips made on the tip imaging target. Due to the limited time available, tip images could not be obtained more regularly. The decision on which tip to use was based partly on these tip images, but also on the requirement to revisit particular target locations, which was found to be challenging when switching tips. Therefore a poor tip was sometimes used in order to perform more accurate positioning.

In addition, the individual properties of some tips (e.g. high vs. low Q factor, magnetic coated or not) led to some tips being preferred for certain scan types.

Reducing tip wear

This work was originally foreseen to develop and calibrate a model of the MIDAS tip-sample force. The reasoning for this is that MIDAS carries a finite number of tips (16), whose sharpness must be maintained for the best imaging. It was planned to use the time during the Rosetta "pre-landing" phase to perform this work, but since MIDAS was able to perform scans earlier than anticipated a detailed model could not be constructed before the start of operations.

Based on prior knowledge of AFM and MIDAS operations, a set of operating parameters were selected that were believed to minimise the force. MIDAS operates somewhat differently than a standard AFM in that each pixel is formed by a separate approach between the tip and sample, rather than by sampling a continuously rastering tip. As such, prior to the set-point critically determines how hard and for how long the tip is "tapping" the surface at each point.

Before operation in dynamic mode, a frequency sweep is performed covering the resonance peak of the cantilever in question. Figure 1 shows an example for one of the cantilevers used in the pre-landing phase. Two key parameters are set as a result of this sweep. The driving frequency is set by specifying the working point as a percentage of the peak amplitude (and whether this is below or above resonance). As MIDAS makes a point approach the amplitude is reduced (in tapping mode) from the working point until the setpoint is reached. This is typically kept rather close to the working point so that the interaction duration is minimised.

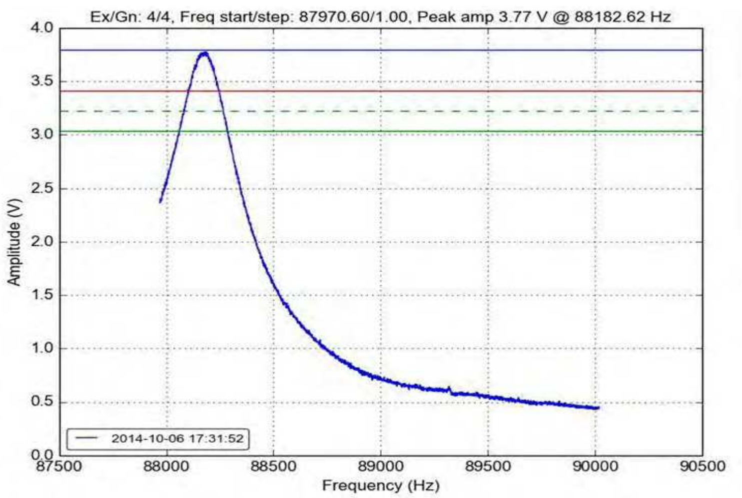


Figure 1: A frequency scan of cantilever 7, used for the majority of scans post -hibernation until the end of 2014. The blue line represents the peak amplitude, the red line the working point (driving amplitude/frequency) of 90% peak and the green line is the set-point of 80%. A re-tune threshold of 85% is given by the dashed line.

This strategy worked very well for the cantilevers used until the end of 2014; since cantilevers with sharper resonances are in principle more sensitive, these were reserved for later use. In early 2015 these high Q-factor cantilevers were first used and several problems were encountered. In fact these cantilevers have resonances that are almost too sharp. As a result small variations in, for example, temperature cause large variations in the amplitude, sometimes providing false triggers of the set-point. This is reflected by distortion in the images and a very noisy cantilever signal seen in housekeeping data.

A working solution to this problem was to introduce several changes:

- reduce the set-point from 85% to a much lower value of 20--30%,
- increase the dwell- times (the pauses made after each X, Y or Z moves) and
- increase the excitation level (of the driving piezo).

When combined, these changes allow stable imaging with the high Q-factor cantilevers, however the new range of parameters does not allow for further optimisation of the tip-sample force.

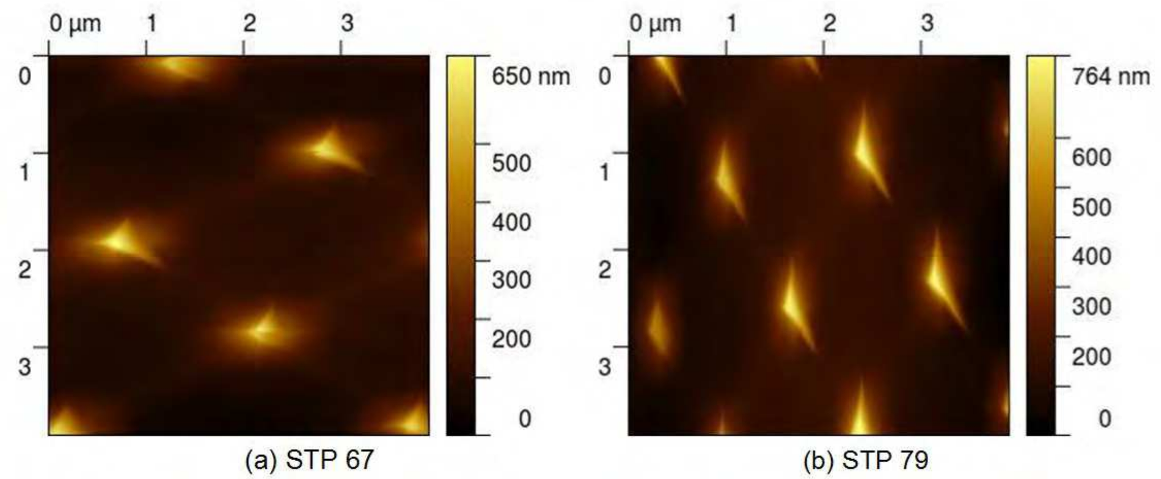
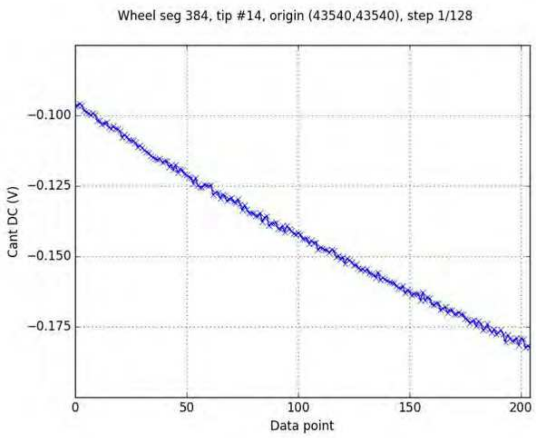
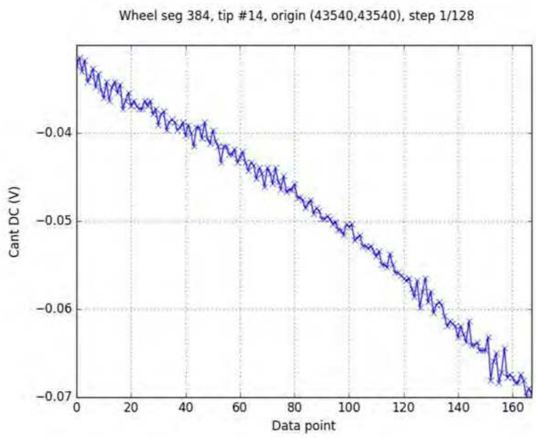


Figure 2: Tip images of tip 8 from STP 67 (a) and STP 79 (b) revealing no severe change of the tip shape after 10 scans in contact mode at a silicon facet.

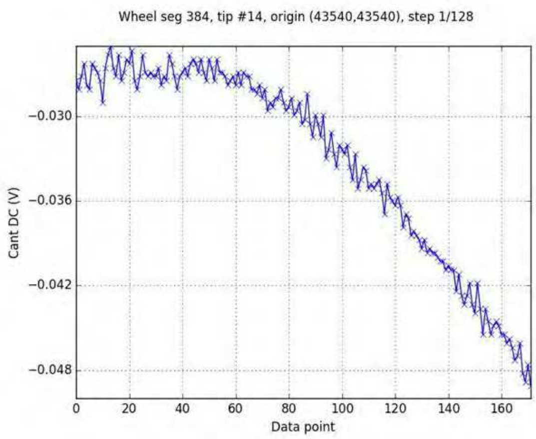
It has been observed that the tip wear is only very limited. As can be seen in a comparison of Tip 8 tip images from STP 67 and STP 79 (see Figure 2 (a) and (b) respectively), the tip changed very little, even though 10 contact mode scans have been performed on a silicon facet in between, which apply much more force to the target and the tip than dynamic mode scans. To reduce the applied force of a contact mode scan, one can only reduce the set-point to a lower value. In this case a smaller static deflection is required to give a positive detection of the sample. The first contact mode scans were performed with a set-point (given as the difference from the zero -deflection voltage far away from the sample) of 0.1 V and this acquired high quality images. The set-point cannot be arbitrarily reduced, however, due to instrumental noise and the finite resolution of the Z piezo. A survey of this parameter was performed by commanding line scans and recording the approach curve (deflection versus distance) at each point. Also two different z step sizes (4 and 8) have been tested; since recording the approach curve is limited to 256 points this is the only way to extend the recorded range. With a z step size of 4 and set points of 0.1 and 0.05 V ((a) and (b) in Figure 3) the first contact with the sample is not visible, whereas at 0.025 and 0.001 V, (c) and (d) respectively, both the free cantilever signal and contact with the sample can be seen. When using a z stepsize of 8 the horizontal non-contact regime is observed also for 0.1 V (e). These tests show that smaller values down to 0.01 V can be used, but at such small values the image quality is affected by falsely triggered points.



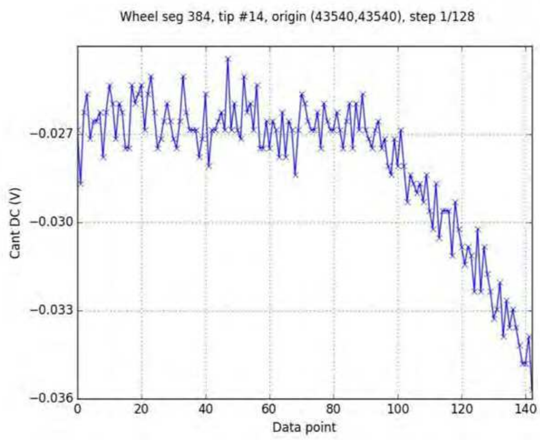
(a) Setpoint 0.1 V



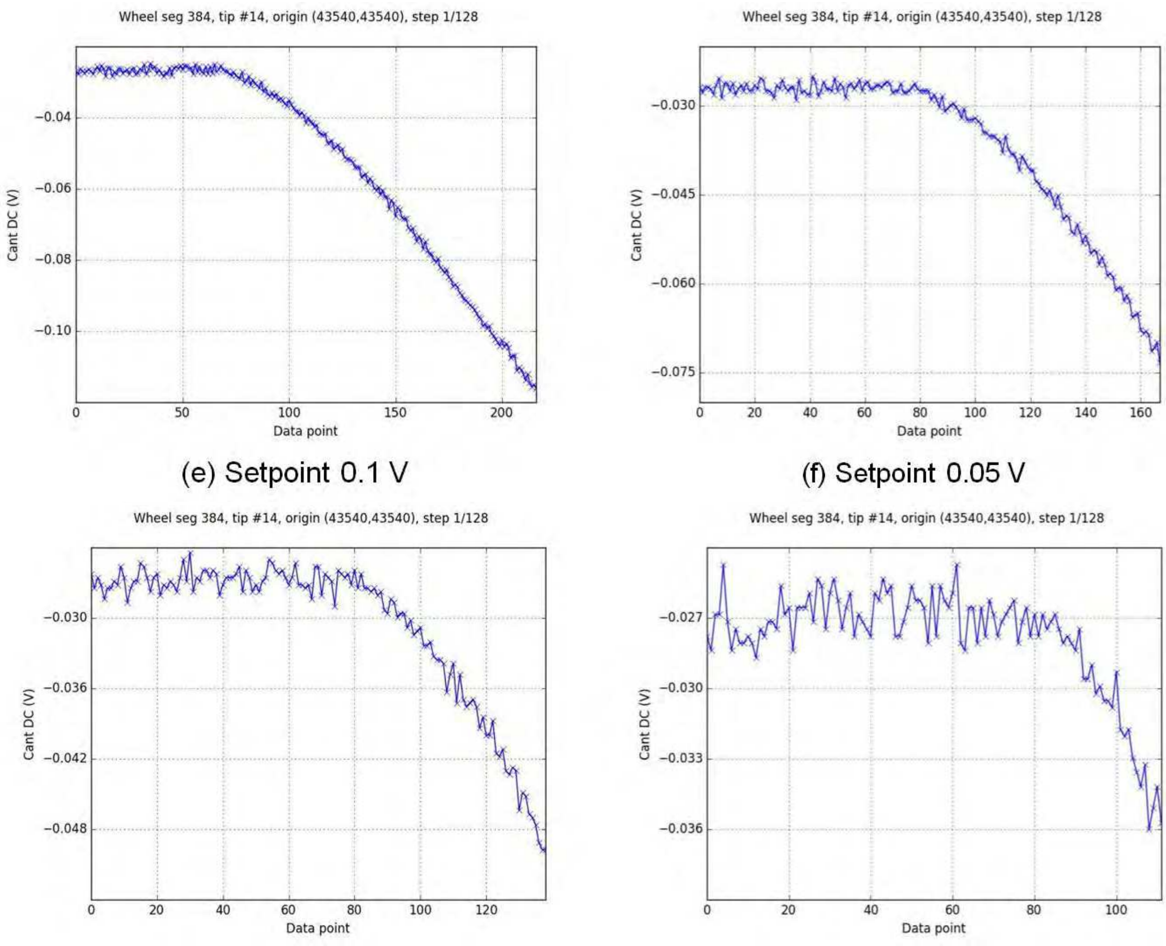
(b) Setpoint 0.05 V



(c) Setpoint 0.025 V



(d) Setpoint 0.01 V



(e) Setpoint 0.1 V

(f) Setpoint 0.05 V

(g) Setpoint 0.025 V

(h) Setpoint 0.01 V

Figure 3: Setpoint variation for a z step size of 4 (a-d) and 8 (e-h) on a solgel target revealing a possible reduction of setpoint down to 0.025 V (c) and (g).

The difference in the images of the same tip shown in Figure 3, especially in Y direction can be explained by the change from open loop to closed loop in this direction. When performing contact mode scans on cometary material, a severe modification can be observed, up to a complete disappearance of the particles at the scanned areas. This might be due to the enhanced force applied by the contact mode scans compared to the dynamic mode.

An additional issue was encountered in STP 49 that resulted in severe tip wear, and in fact probably removed the entire tip. A problem in the calculation of the set-point on-board MIDAS resulted in a negative set-point being calculated. MIDAS operates by extending the Z piezo towards the surface at each point until the measured amplitude drops below the set-point (in dynamic mode). Since the RMS amplitude can never be below zero, a negative set-point resulted in the piezo being fully extended at each point, regardless of whether the tip was in contact with the sample or not. Thus tip 13 was "crashed" into the sample or substrate at each pixel position. This was encountered during a line-scan with control data commanded, such that the approach curve was visible. Figure 4 demonstrates this, proving that the tip did indeed make strong contact with the substrate, resulting in excessive bending of the cantilever.

This was further demonstrated in STP 53 when a tip self-image was attempted using this tip, which aborted after several lines of data showing no tip. The problem was eventually localised to a routine in the on-board software in which 32-bit multiplication was used to convert the commanded set-point (a percentage) into a real voltage value. This issue is not, however, reproducible on the ground, and a temporary solution was designed to patch the OBSW and force the sign bit whenever this multiplication is used, to avoid such problems.

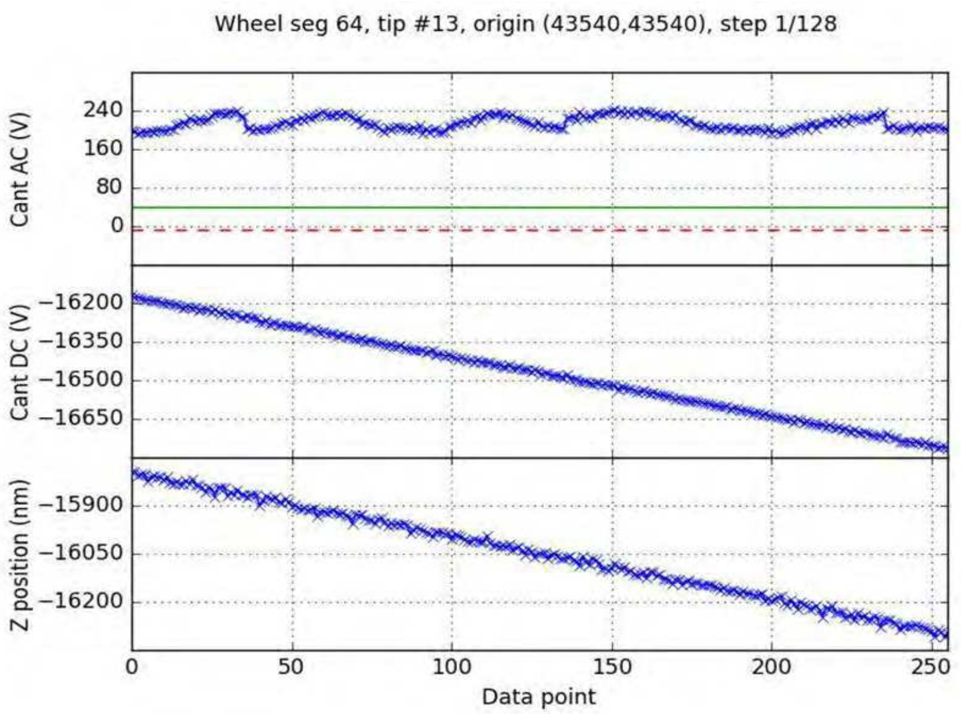


Figure 4: Raw (uncalibrated) control data for a line scan with tip 13 and a wrongly calculated set-point. Note that both the Z position and cantilever DC signals have minimum possible values of -16384, and hence this shows that the piezo was fully extended, resulting in maximum deflection of the cantilever.

Temperature and Topography

The effect of temperature on the scanning behaviour of the MIDAS atomic force microscope was thought to be one of the major limiting factors on imaging stability and a cause of distortion in the X, Y and Z axes. Indeed the ground- based Flight Spare model of MIDAS shows sensitivity to the laboratory diurnal cycle even when inside a vacuum chamber. This work focuses on attempting to understand these effects by analysing the response of the instrument to both endogenic and exogenic changes.

Four housekeeping temperature sensors are installed in MIDAS: on the preamplifier board, the instrument baseplate, the power converter and at the dust inlet. These temperatures are recorded in the engineering housekeeping packet “HK1”, which is sampled every 60s under typical conditions. Additional sensors are mounted on both capacitive sensors (the CSSC) in the XYZ stage, but data from these are only available when the CSSC itself is powered; in the early operations the CSSC was only ON during closed-loop operations.

As a first step the data of these temperature sensors was investigated in terms of module power states; MIDAS subsystems can be separately powered and are switched on or off as needed. As discussed earlier, MIDAS was able to operate earlier than expected. However since power was still limited in this period, MIDAS had to be switched on and off repeatedly. In later mission phases the instrument was left continuously on, apart from periodic reboots after software upgrades or instrument reconfiguration.

In Figure 5 one can see the temperature curves for a reboot performed at the start of STP 45, taking place during an orbital correction manoeuvre (OCM) when no scanning was otherwise possible. MIDAS was shut down at 23:30 and restart at 23:44 and one can see the large temperature decrease during this period. After switching on again the rest of the OCM was not used for further experiments for safety reasons (except for a frequency scan after the restart to initialise MIDAS). Immediately after the OCM four “approaches” were performed to get the microscope warmed up for the scan (which started approximately at 09:00). An approach refers to movement of the coarse approach stage, a subsystem used to move the microscope close to the sample. This consists of a DC brushed motor housed in a pressurised bellows. This motor drives a spindle, which in turn moves the entire AFM in coarse steps in the Z direction (towards the sample wheel).

The approach stage is a relatively high power subsystem and is used in this case to actively heat the instrument and try to propagate the heat generated throughout the instrument and speed up the thermalisation of MIDAS.

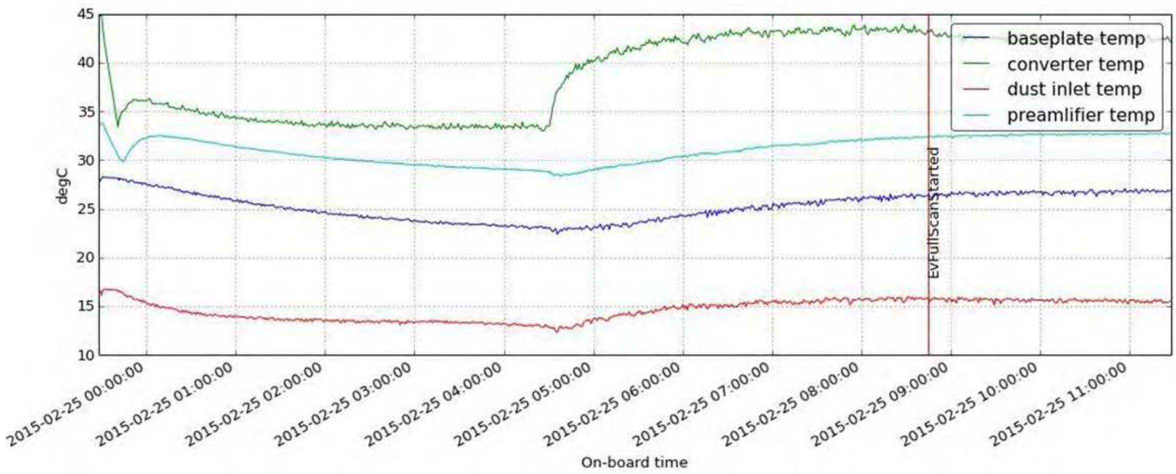


Figure 5: Temperature curves of the four sensors at a reboot at the start of STP 45, showing the decreasing temperature at the left side of the graph at the shut down at 23:30. After the restart at 23:44 only one frequency scan was performed till the end of the OCM at approximately 04:30. For warming the microscope up four approaches were performed till the first scan after the reboot at 09:00, where the temperature gets approximately saturated and allows stable performance.

The temperature variation during a contingency exposure can be seen in Figure 6 (a, b) at the end of STP 30 and the start of STP 31. In this case all subsystems were powered off, inducing a large temperature decrease recorded by all sensors. The most critical measurement is the preamplifier sensor, since this is closest to the cantilevers. This shows a maximum decrease of 15°C for (from ~46 °C down to 31 °C). After this minimum the subsequent switch- on leads to another dramatic increase in temperature. At this point the temperature variation leads to a variation in the scan head in height, which can be seen for the Z piezo HV Monitor in Figure 6 (c) by the red curve. This shows a clear overall increase of the Z piezo voltage from the beginning of the scan to the end, which can be related to a height variation of the scan head and since this is not observed at roughly constant temperatures it may be temperature driven.

Another effect that causes some temperature variation is switching between the two cantilever blocks. There are sixteen cantilevers on-board MIDAS, manufactured in chips of four, with eight cantilevers connected to each of two independent pre-amplifiers. This effect can be clearly seen by plotting the temperatures during STP 35 and the corresponding power status of the two blocks in Figure 7 (a, b). The preamplifier temperature increases by switching from block 1 to block 2 and decreases again by switching back. This unwanted behaviour can be avoided by straightforward switching both block on all of the time, since closer to the Sun, power is no longer a limitation.

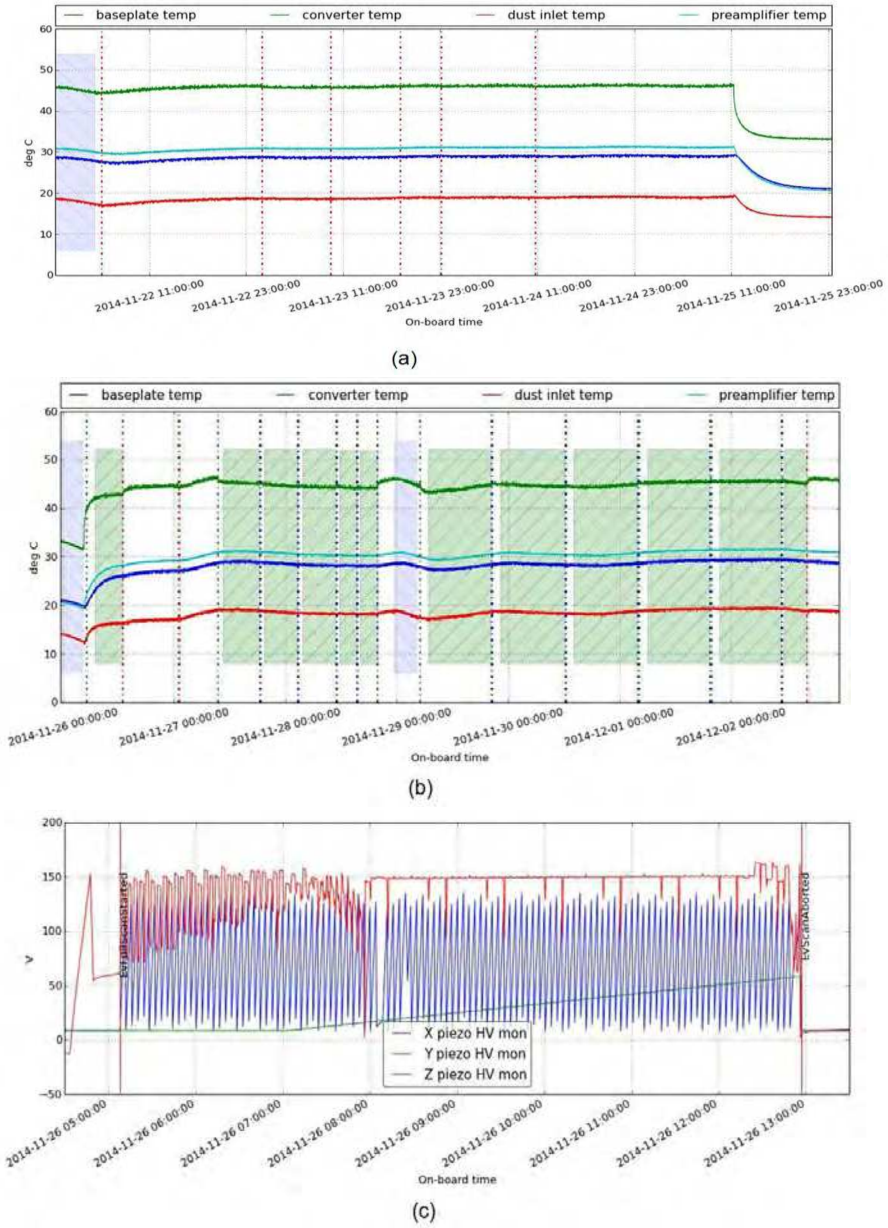
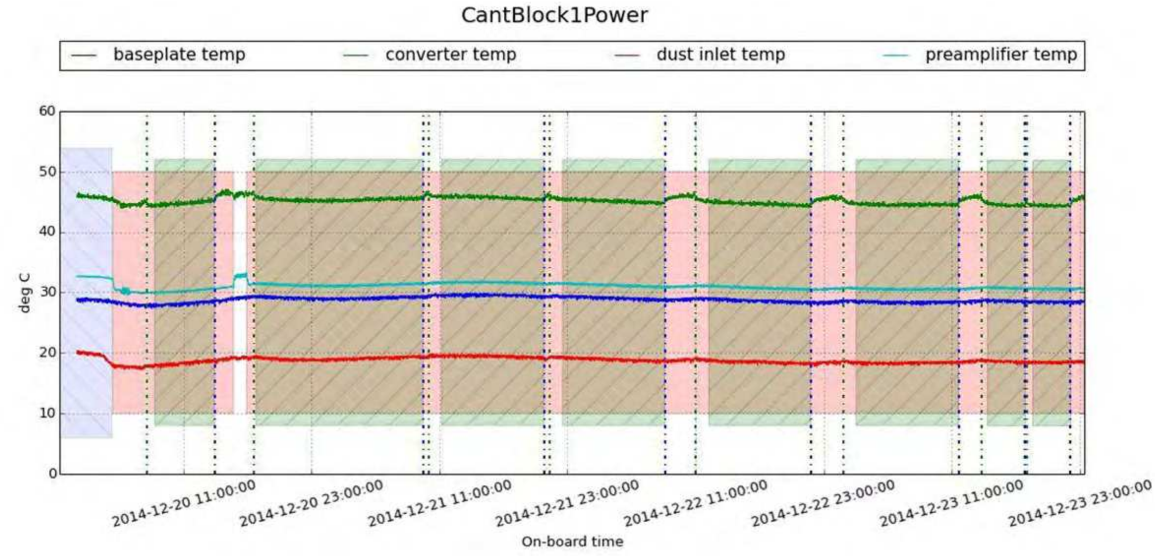
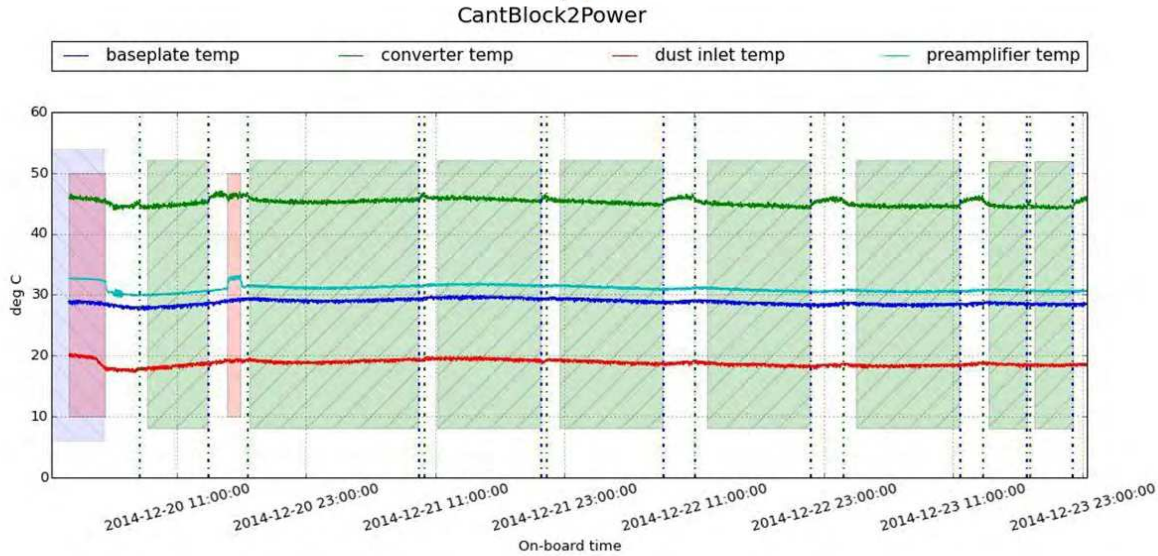


Figure 5: The blue highlighted area marks the OCMs, the green highlights ongoing scans and the vertical lines in green marks the commanded start of a scan, the blue line marks the end of a correct full scan and the red vertical line is for an aborted scan. The time offset from the green vertical line to the green highlighted area is due to the anti-creep line scans performed before each full scan. (a) Temperatures for STP 30 showing the decrease at the end, when MIDAS was idle. During this STP all scans were aborted due to a contaminated tip, which led to an incorrect approach. (b) showing the STP 31 temperatures with an OCM at the beginning and a scan following. One can clearly see the increasing temperature directly after the OCM is finished. The first scan after the OCM is at a point where the temperature is not yet saturated, which will lead to a failed scan. (c) This graph shows the X,Y and Z piezo HV monitor signal during the first scan after the OCM. The constant Y piezo HV (green line) at the beginning of the scan shows the anti-creep line scans. The X piezo HV shows a very periodic behaviour due to the fast scan axis. The Z piezo HV shows an increasing tendency during the anti-creep line scans and also during the first part of the full scan, but afterwards the Z piezo HV monitor shows a constant value nearly to the abort. The increasing Z piezo HV may be a temperature effect which leads the piezo to extend more and more during heating.



(a)



(b)

Figure 7: Marked in red is the power status of the cantilever block 1 (a) and 2 (b), revealing a temperature jump by switching between those two, especially at the preamplifier temperature.

Beside these severe temperature variations due to the switching of different modules, at the approach (after the OCM Figure 8) one can observe a small increase in the power converter temperature. Also after a full scan is performed the temperature of the power converter rises approximately 1°C. As one can see in Figure 8 this increased temperature is only of short duration; at the start of the following scan (each scan is indicated by a green block) the temperature has returned to its previous, stable, value and will not influence the scan. Just before the first OCM block in this STP (marked by blue blocks), one scan gets aborted, due to too little time left before the OCM starts. During the OCM MIDAS is not switched off but only in a safe state with no scans (since there is a risk of damage due to the higher vibration loads during major thruster burns), so there is no severe temperature decrease as can be observed during the reboot. Other such small, in temperature and time, variations can be observed by switching on the approach position monitor (LVDT), the motor driver power and the wheel motor, but as they are very small and short in time, they do not affect any scan performed afterwards.

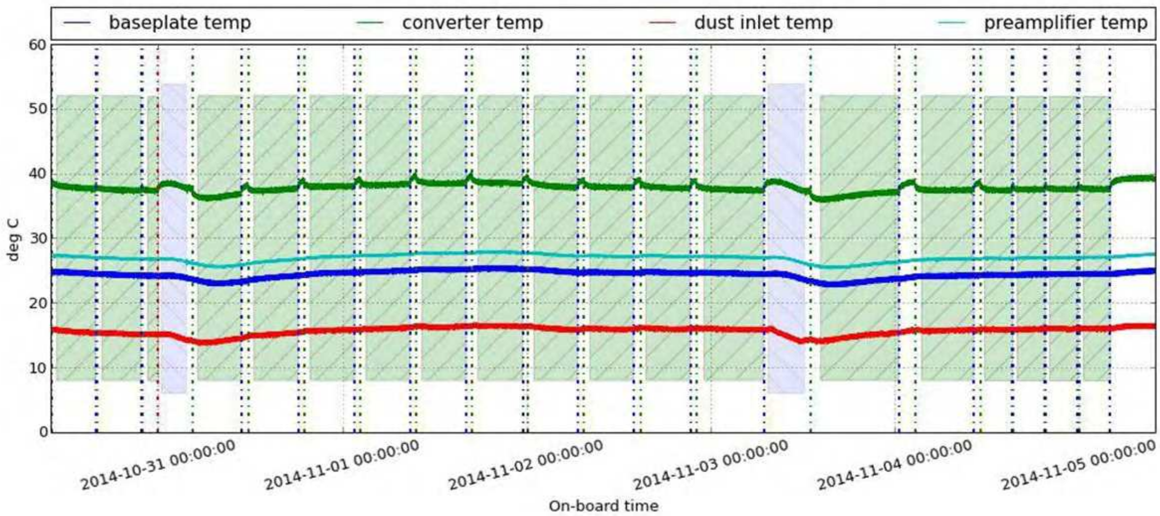
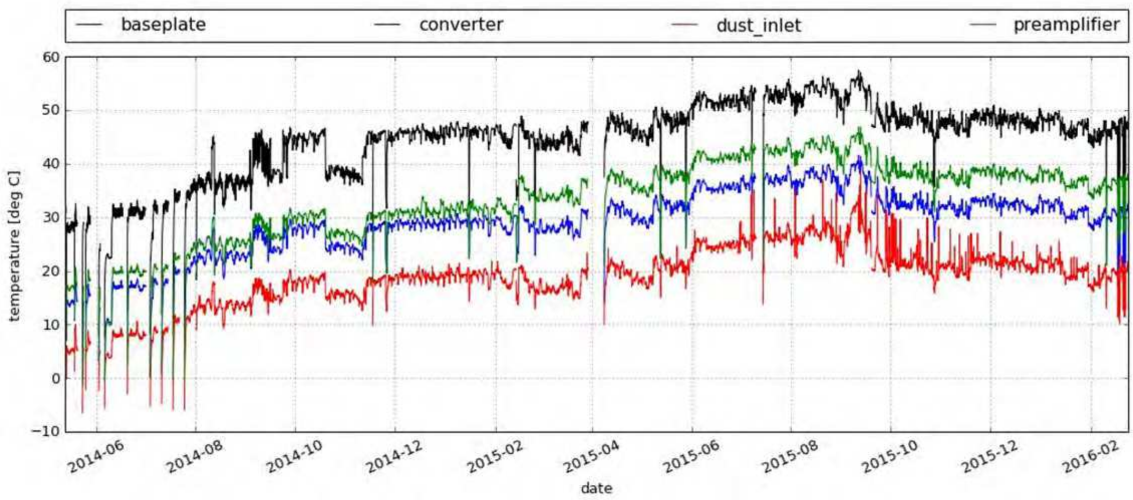
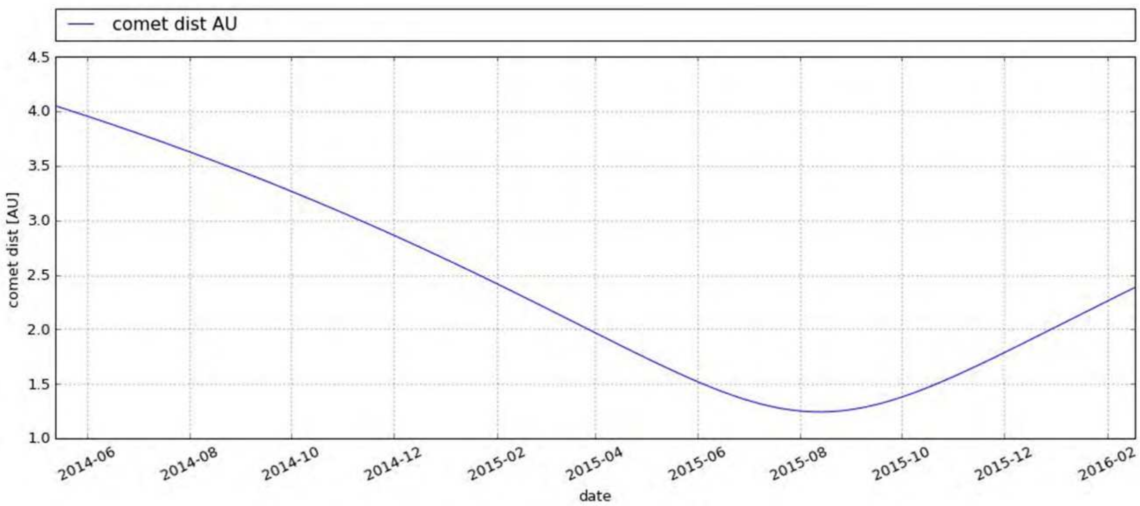


Figure 8: Temperature of the four sensors during STP 26 with most of the time used for scanning (green blocks). At the beginning of the first OCM (blue block) a scan gets aborted due to little time left and MIDAS going to a safe state during the OCM. After both OCM a small increase due to the approach can be observed and after each scan the temperature increases also for approximately 1 °C.

With almost two years of continuous operations since hibernation, long term trends in the temperature, and their effects, can be monitored. In May 2014, four month after the spacecraft woke up from hibernation, the comet was approximately 4 AU from the Sun. During the nearly two years of observation at the comet the distance decreased to 1.25 AU during the perihelion passage in September 2015 and has been increasing again as the comet and spacecraft depart the inner Solar System (Figure 4 (b)). The four temperature sensors of MIDAS were collecting data with a housekeeping rate of 30s during the entire mission. Thus a long term temperature variation can be observed, which is shown in Figure 9 (a). A general trend following the comet (spacecraft) distance from the sun can be observed, with a maximum mean temperature at perihelion in September 2015 and decreasing temperatures with increasing distances. All four temperature sensors are show increased temperatures of approximately 25°C at continuous operation when reducing the comet-sun distance from approx. 4 AU to approx. 1.25 AU. As detailed in the last report, MIDAS operations were possible earlier than originally foreseen, but with some constraints. During far approach phase there was insufficient solar energy available to power the entire payload, and instruments could only be powered for limited times. This can be seen as data gaps in the temperature plots. When switching back on, MIDAS had to heat up again to gain a stable working environment, which must be taken into account during future planning when the increasing solar distance will once again result in instrument time-sharing. Other smaller temperature variations will be discussed in the next paragraphs.



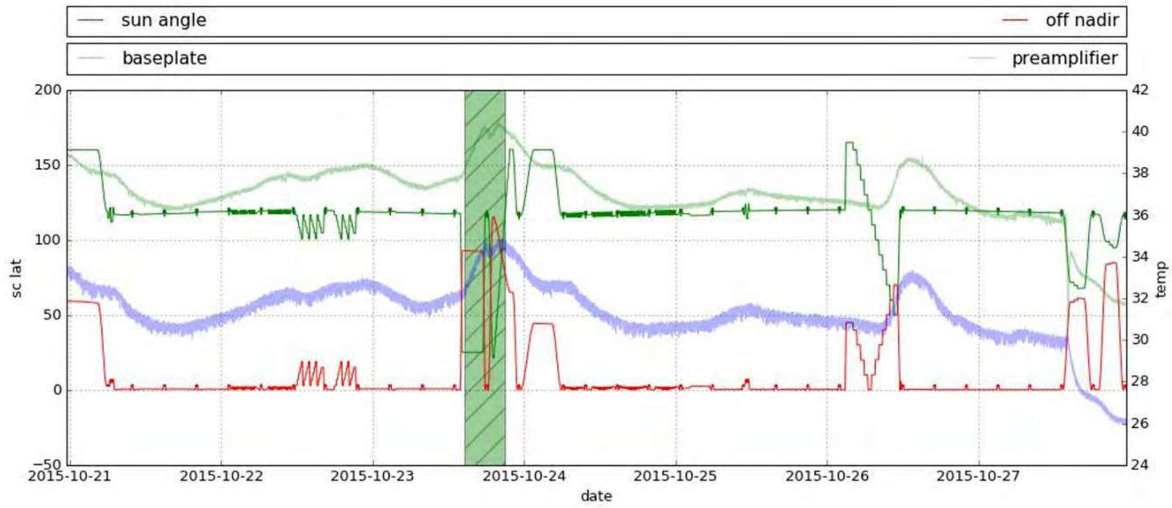
(a) Temperature measurements since 05-2014



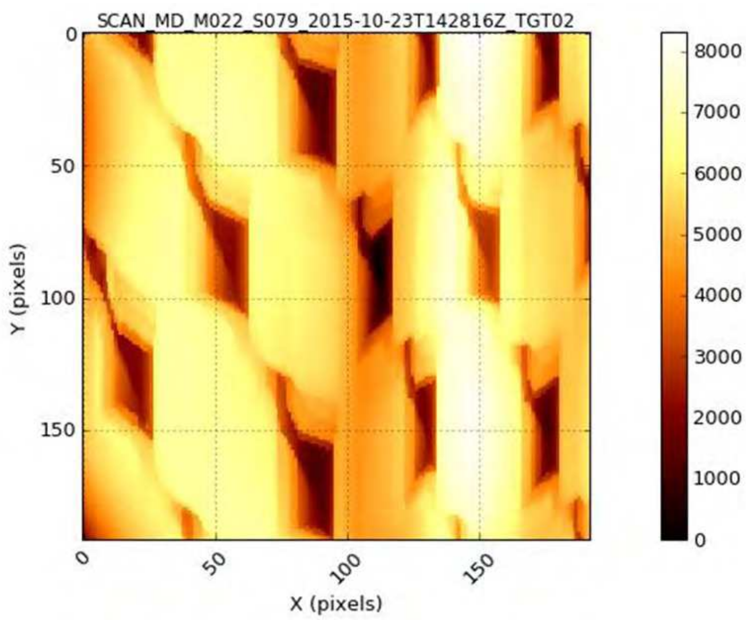
(b) Comet-sun distance since 05-2014

Figure 9: (a) temperature measured at the four temperature sensors during the operational mission since May 2014 to February 2016 and (b) comet - sun distance during the same period, revealing an increased overall temperature trend with decreasing comet-sun distance.

At decreased comet-Sun distance more severe temperature variations could be observed, as seen in Figure 10 (a) which shows the temperatures and geometry during STP079. The strong correlation of the distortion with spacecraft pointing was clearly observed at small comet-sun distances. When the nadir platform is oriented more towards the Sun the temperature sensors show an increase of 2-3°C in a very short time, followed by a decrease when pointing is back to nadir. The short delay might be due to the heat dissipation from the illuminated panel to the sensors. Due to this temperature variation, scans performed during these periods are rather distorted, as can be seen representatively in Figure 10 (b). Not only are the X- and Y-piezo affected by this temperature induced distortion, but the Z-piezo sensitivity was also seen to varying strongly with temperature. As a result the Z piezo saturated very easily during these scans. Once this issue was identified, attempts were made to avoid those periods as far as possible without losing too much operational time.



(a) Geometry and temperatures of STP 79



(b) topography image of the XY calibration target

Figure 10: (a) geometry and temperatures during STP 79 with the green marked time period showing the acquisition time of the scan showed in (b) revealing severe temperature variations during and shortly after near sun pointings. (b) calibration target scan during a near sun pointing revealing very distorted features.

Open Loop or Hybrid Operation

The XY stage used to position the sample with respect to the cantilever was designed to be used in a closed -loop mode, where the reference signal was provided by capacitive sensors. Unfortunately the X- axis sensor was found to be defective after launch. Thus most scans during the cruise phase were performed in open -loop mode. However, scans in open loop are more susceptible to temperature drifts (as discussed in Temperature and Topology above) and to the non-linear behaviour of the piezos. For this investigation all scans were performed on the X/Y calibration target, Figure 11.

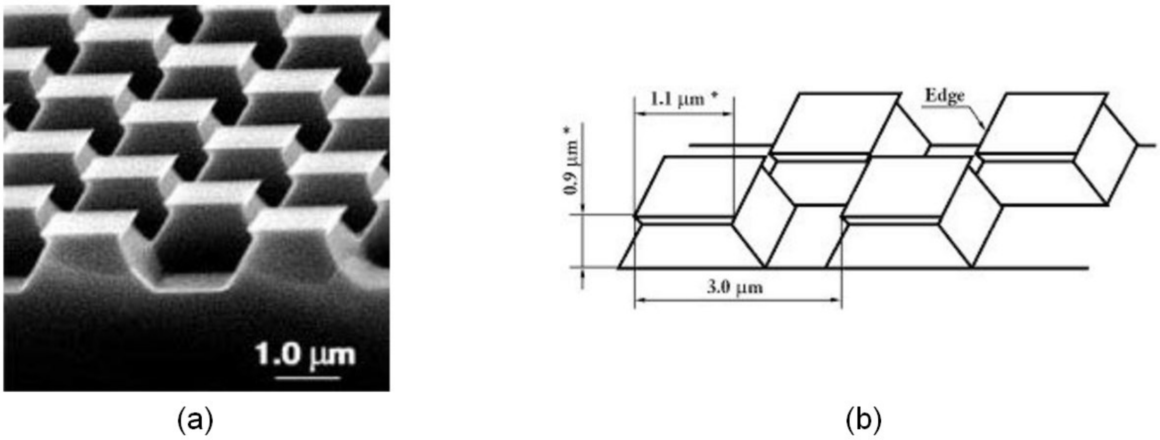


Figure 11: X/Y calibration target. (a) showing an SEM image and (b) revealing the dimensions of this target, which is used for the open loop and hybrid mode comparison.

In order to decide whether or not, and how, to use the remaining CSSC channel, initial tests were performed using the flight spare (FS) model. Scans were first performed with a high aspect ratio of 32x128 pixels (or vice versa) to check the piezo high voltage (HV) in open loop and again with the remaining CSSC sensors used to control the Y direction in closed loop. Such images were acquired with all possible combinations of the fast scan direction, the direction of the high HV variation - from low to high or vice versa - and the long and short axis.

By comparing these images one can see different behaviours. Firstly some images show strange topography information, which made this analysis very difficult to perform. A comparison of a correct and a distorted image is shown representatively in Figure 12 and Figure 13 (a, d). As well as the topography channels (a), the phase signal and the X and Y piezo HV monitor (b, d, respectively) also reveal a clear distortion in the line alignment. In Figure 12 the correct image clearly shows the X/Y calibration standard with the proper additional channels, whereas Figure 13 represents both a distorted topography and all other channels.

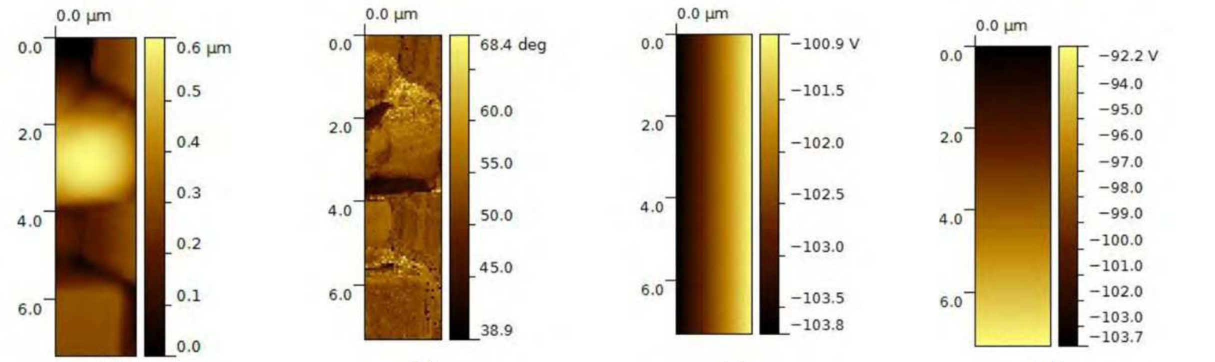


Figure 12: representative 32x128 pixel image in open loop with step size of 15/15 X/Y leading to a ~1.8x7.2 µm² scan of the X/Y calibration target for investigation of aspect ratio scans and scan directions with X as fast scan direction and both direction from low to high voltage. (a) topography channel showing the calibration squares, (b) phase channel, (c) X piezo HV monitor and (d) Y piezo HV monitor showing the high voltage in X and Y direction for visualizing the scan direction as left to right for the X direction and as top to bottom for the Y direction.

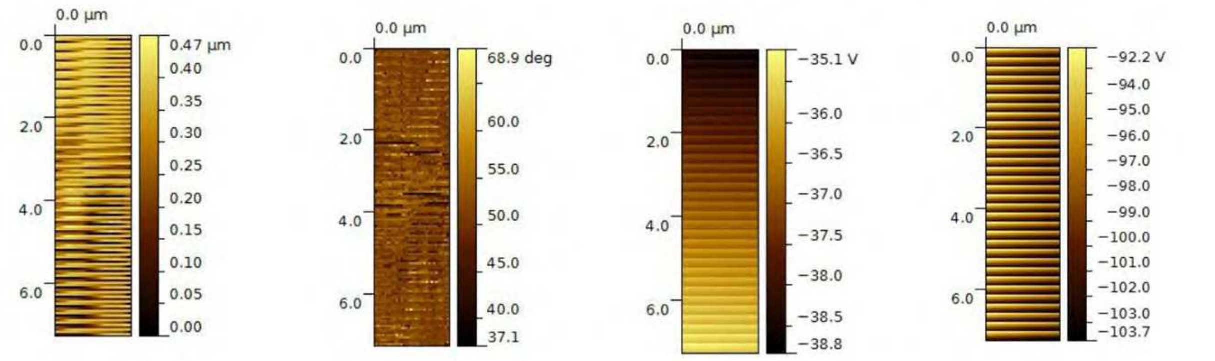


Figure 13: representative 32x128 pixel image in hybrid mode with step size of 15/41 X/Y leading to a ~1.8x7.2 µm² scan of the X/Y calibration target for investigation of aspect ratio scans and scan directions with X as fast scan direction and both direction from low to high voltage. (a) topography channel showing distorted line alignment, (b) phase channel, (c) X piezo HV monitor and (d) Y piezo HV monitor showing the high voltage in X and Y direction for visualizing the scan direction and revealing an incorrect image processing of MIDAS.

As mentioned above, no systematic behaviour in terms of a specific parameter could be found by comparing the whole set of images. Neither a change in the fast scan direction, nor a variation in the direction from low to high voltage to high to low voltage was found to be responsible for such a line distortion. A second strange behaviour was observed by comparing the X and Y piezo HV monitor in Figure 14, which representatively show the two channels for two different images. Figure 14 (a, b) shows the channels as they should appear: low voltages at the left and high voltages at the right for the X HV monitor and low voltages at the top and higher ones at the bottom for the Y HV monitor signal. As a comparison with figure 2.04 (c, d) reveals, a strange shift in both the represented direction and the channels can be observed some images. Also for this behaviour no set of parameter could be found to be responsible for such a flipping.

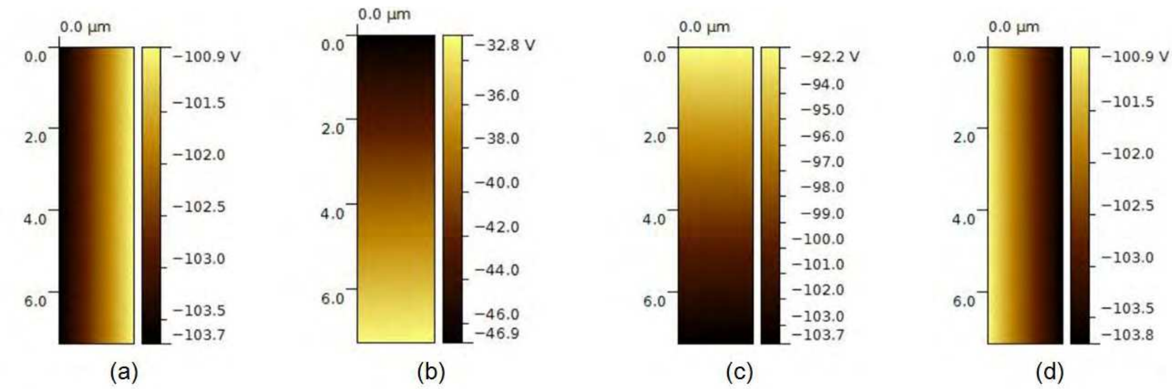


Figure 14: Comparison of X and Y HV piezo monitor channels of a 32x128 pixel image in open loop (a) and (b) and hybrid mode (c) and (d) with step size of 15/15 and 15/41 X/Y, respectively, leading to a ~1.8x7.2 µm² scan of the X/Y calibration target for investigation of aspect ratio scans and scan directions with X and Y as fast scan direction, respectively. (a) and (b) show the correct HV piezo monitor signal and (c) and (d) show a random flipping of the direction and the channels.

A separate activity was instigated to find the cause of these problems. Eventually it was isolated to a recent upgrade of the on-board software, which introduced a new telecommand responsible for clearing all datasets (rather than the previous method of selecting and deleting individual scans). The bug was fixed, tested on the FS and subsequently uploaded to the FM during an instrument maintenance slot.

Discounting these issues, the procedure and the image acquisition of all sets of parameters gave the intended results, as can be seen in Figure 12 (a-d). By taking the housekeeping (HK) data into account the HV channels were found to work in the expected direction and also the aspect ratio with the small and large axis is checked to be fine for all parameters. Taking all these results together, there are no limitations for the usage of the fast scan axis in X or Y and also the aspect ratio of the scans can be chosen due to optimize time management.

As a next step we investigated image artefacts on 80x80 µm² scans by varying the fast scan direction; the direction of voltage change (low to high, or high to low) was set to a low voltage at the scan start and a high voltage at the end, since previous tests did not show a significant difference. The fast scan direction refers to the direction in which the scanner is moved during a single line in the image. The piezo responsible for the fast axis is therefore exercised repeatedly in an image scan, whereas in the slow direction the piezo makes just a single, incremental, movement. Intuition suggests that distortions are most likely to occur in the slow direction, and that the remaining CSSC channel should be used in this direction, but this had to be tested.

First we concentrated on the open loop due to the fact that nearly all scans performed on the Flight Model post-launch were in open loop mode. As one can clearly see in Figure 15 and Figure 16 there is a severe distortion observable for both scan directions and voltage variation. It is also clear from these images that the tip used for these experiments was rather blunt (see Figure XY for a tip images), however details in topography were not essential here and sharp tips could be preserved for more detailed scans.

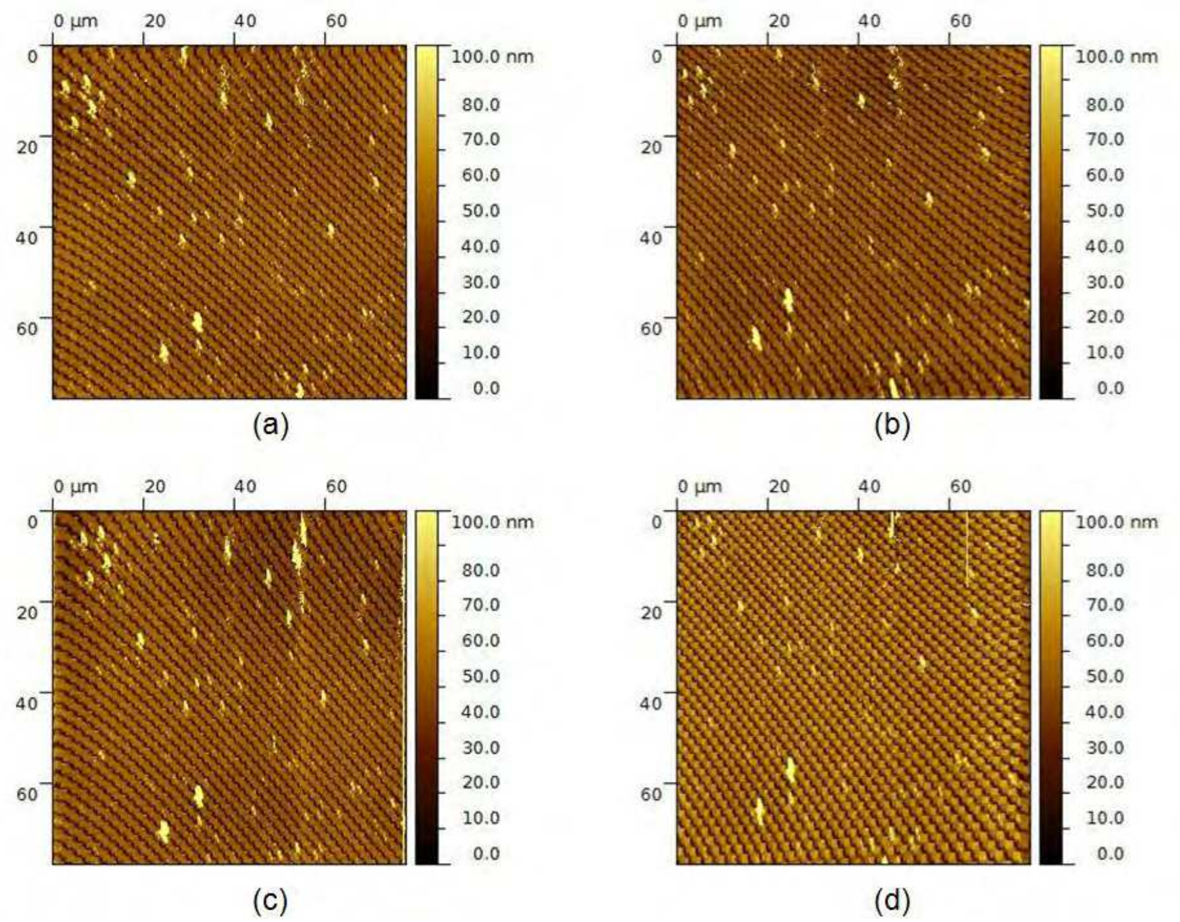


Figure 15: Comparison of fast scan direction and piezo voltage direction for 80x80 µm² scans with 256x256 pixels for the open loop mode with a very blunt tip. In (a) and (b) the image was acquisited with the X fast scan direction and (c) and (d) the Y direction was used as fast scan direction. The voltage was varied from low to high values for images (a) and (c), whereas in (b) and (d) higher values to lower ones were used. All the images reveal a 5 - 10 µm wide severely distorted area at the beginning of both the fast and slow scan axis, which can be seen in the top left corner for (a) and (c) and in the bottom right corner for (b) and (d).

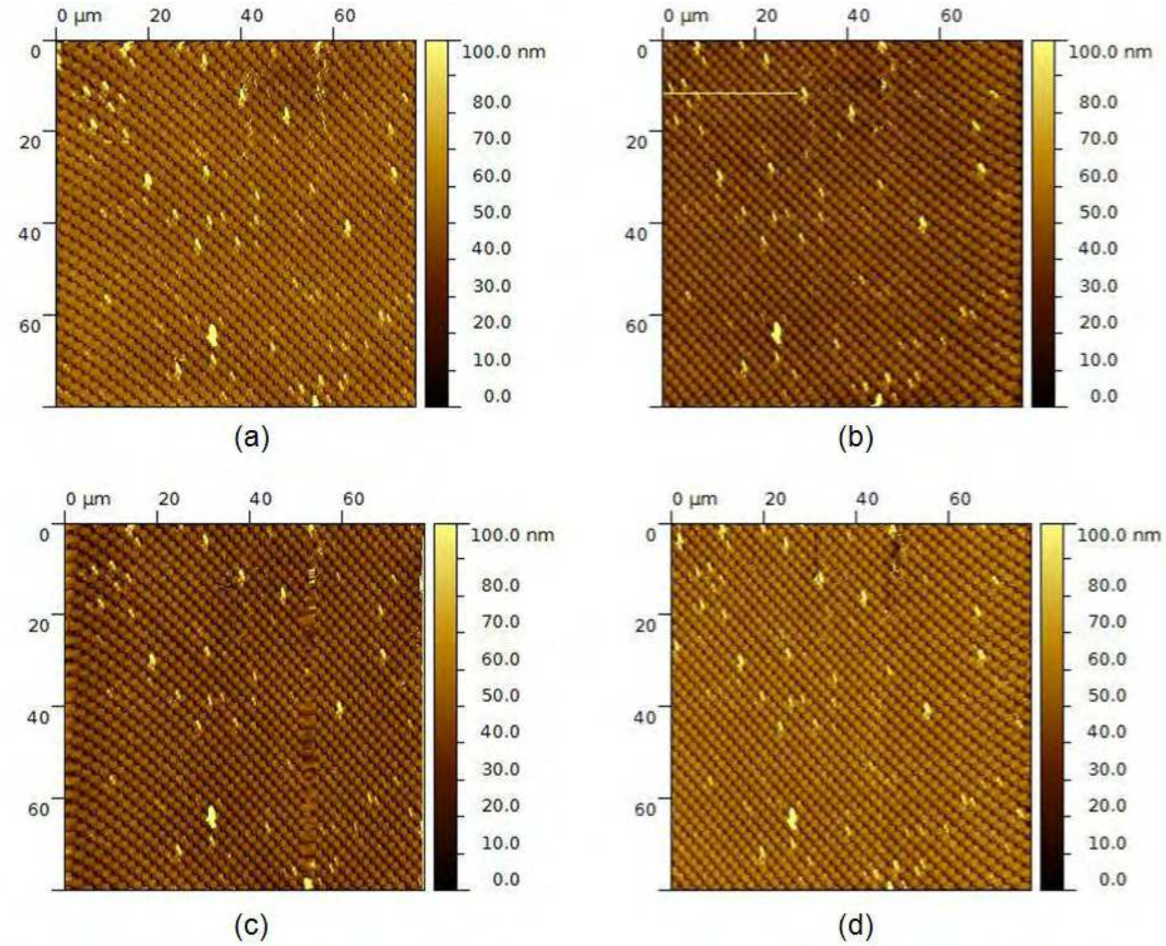


Figure 16: Comparison of fast scan direction and piezo voltage direction for 80x80 µm² scans with 256x256 pixels for the hybrid mode with a very blunt tip. In (a) and (b) the image was acquisited with the X fast scan direction and (c) and (d) the Y direction was used as fast scan direction. The voltage was varied from low to high values for images (a) and (c), whereas in (b) and (d) higher values to lower ones were used. All the images reveal a 5 - 10 µm wide severe distorted area at the beginning of both the fast and slow scan axis, which can be seen in the top left corner for (a) and (c) and in the bottom right corner for (b) and (d).

Beginning in the top left / bottom right corner for the low to high and high to low scan direction, respectively, one can see the severe distortion in both the horizontal and vertical direction. In both directions the first 5 - 10 µm show the worst distortion, which may be explained by piezo creep. A predominantly non-linearity effect can be excluded since it occurs at all positions of the piezo. A comparison between a representative open loop and hybrid mode image (Figure 15 and 16)reveals a much lower distortion at the scan start and at each line start when using the hybrid mode. As the scan direction and the voltage variation direction does not seem to affect the order of distortion, we have chosen to work from lower to higher voltages for all of the images. A key conclusion from this work package is that the hybrid mode does indeed improve the scan accuracy, even when available in only one channel. This comes at the cost of higher power consumption on-board.

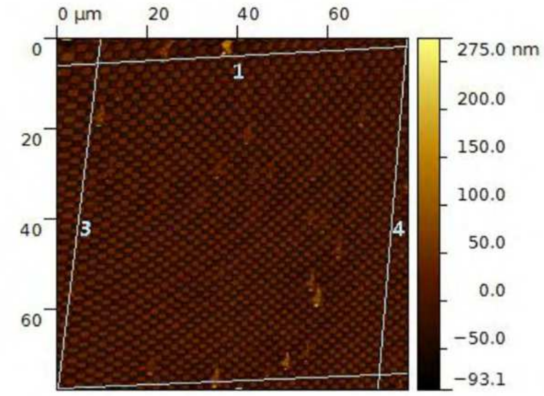
A second very interesting observed effect is that the squares on this calibration target appear as rhombus (diamond- like) structures. Although the alignment between the scanner X/Y axes and the calibration sample is not expected to be perfect, the calibration facets should still show right angled corners and as shown this seems not to be the case. This effect can be more carefully analysed using the hybrid mode images, since in this mode at least one direction is controlled in closed loop which makes it much more regular than the open loop image (this enhancement is clearly seen by the "tilting" of the nominal vertical and horizontal structures in Figure 16 which in the open loop reveals a very different tilt for different Y values, but very similar tilt in the hybrid mode). The effect of diamond like structures cannot be explained by a simple sample tilt not affecting the structure appearing rectangular.

Beside these geometrical distortions the nonlinearity of the piezo can also be observed by looking at the lengths and widths of the squares, which should have a periodicity of 3 µm (e.g. left edge to left edge). Measurements at different positions for the open and hybrid mode images with the X direction as fast scan direction reveal a strong enlargement at the top left corner and also a strong reduction in the bottom right corner, which is also a result of piezo creep. Distortion in the intermediate zones is also observable, where in one direction enlargement and in the other direction a reduction occurs. These observations show that the effect of the piezo creep and the piezo nonlinearity can not be fully separated. Table 1 and Figure 17 show the measured values and positions and different zones of enlargement and reduction. In Figure 17 (c, d) four different line cross sections are shown, which reveal the strong distortion very clearly. The measured values of the calibration standard structures are marked by vertical lines and given in Table 1.

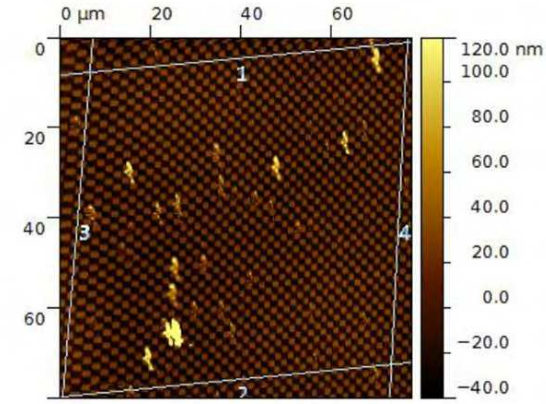
open loop mode [µm]				hybrid mode [µm]			
profile 1	profile 2	profile 3	profile 4	profile 1	profile 2	profile 3	profile 4
4.5	4.3	4.0	3.3	4.6	4.5	3.1	3.2
4.1	3.9	3.0	3.5	4.0	3.8	2.8	2.8
3.7	3.8	3.4	3.1	4.0	4.0	3.1	3.1
3.7	3.5	3.0	3.1	3.4	3.6	2.9	2.8
3.5	3.6	2.8	2.8	3.6	3.4	2.8	3.1
3.5	3.2	3.1	3.1	3.4	3.3	3.1	2.9
3.2	3.3	2.8	2.4	3.1	3.7	2.9	2.8
3.3	3.0	2.7	2.8	3.4	2.4	3.0	3.0
3.0	3.0	2.4	2.6	3.1	3.2	2.8	2.9
2.9	2.9	2.6	2.5	3.0	2.9	2.9	2.9
3.1	2.9	2.4	2.6	3.1	3.3	3.1	2.9
2.8	2.8	2.5	2.3	3.0	3.1	2.7	3.0
3.0	3.0	2.2	2.5	3.1	2.9	2.9	2.8
2.8	2.8	2.5	2.4	2.8	2.8	3.4	3.1
2.7	2.7	2.4	2.4	3.1	2.8	2.9	2.9
2.8	2.7	2.3	2.4	2.7	3.0	2.8	2.8
2.9	2.7	2.3	2.3	2.7	2.8	3.1	3.2
2.8	3.0	2.4	2.4	3.0	2.7	2.9	2.7
2.8	2.8	2.2	2.4	2.8	2.8	2.9	2.9
2.8	2.8	2.3	2.1	2.8	3.0	3.1	3.1
2.8	2.8	2.3	2.4	2.9	2.8	3.0	2.9
2.8		2.6	2.3	2.8	2.8	2.9	3.1
2.8		2.4	2.3	2.8	3.0	3.0	2.8
		2.2	2.5		2.8	2.9	3.1
		2.5	2.1			3.1	2.9
		2.3	2.4			2.8	3.2
		2.2	2.2				
		2.5	2.4				
		2.1	2.4				
			2.1				

Table 1: Measured values of the calibration standard structures for open loop and hybrid mode horizontal (profile 1 and 2) and vertical (profile 3 and 4) revealing (i) in blue an increased structure length at the start of each line and image, (ii) in red a decreased structure length, mainly at the open loop at the line and image end and (iii) in green the correct structure dimensions dominating at the hybrid mode.

These show that using the hybrid mode with the closed loop in the Y direction results in a reduction of the distortion and of the variation of the calibration structure's dimensions in this direction. In conclusion the hybrid mode should be used in the slow direction for future scans on the Flight Model. However, some distortion will remain and this very complicated behaviour makes it practically impossible to define one calibration value in each direction and another strategy has to be found to correct these distortions and calibrate the image in a reproducible way.

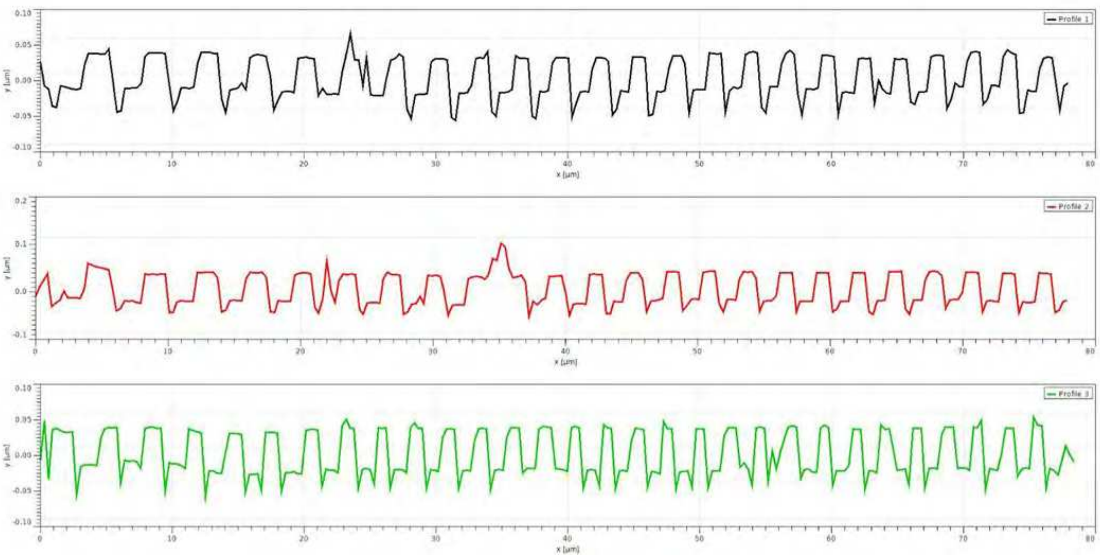

0 µm
20
40
60
0
20
40
60
1
3
4
275.0 nm
200.0
150.0
100.0
50.0
0.0
−50.0
−93.1

(a)

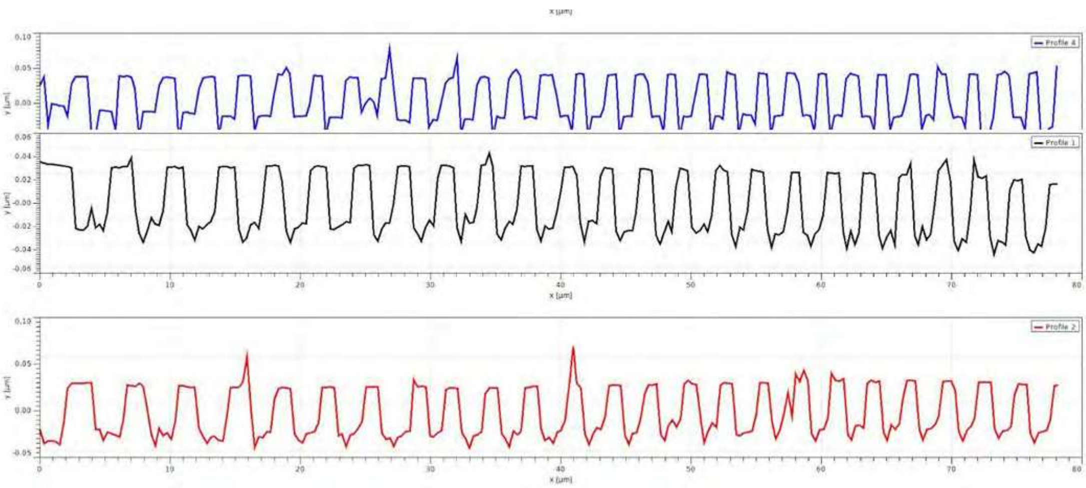

0 µm
20
40
60
0
20
40
60
1
2
3
4
120.0 nm
100.0
80.0
60.0
40.0
20.0
0.0
−20.0
−40.0

(b)

(c)



(d)



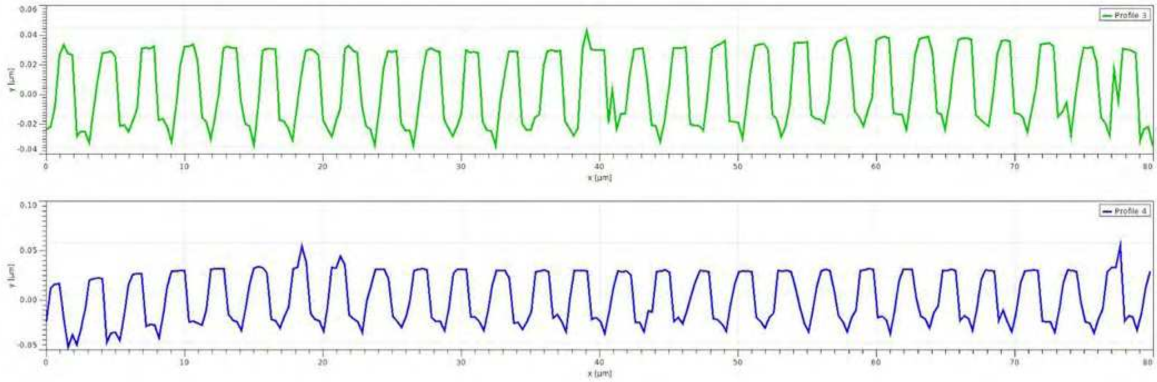


Figure 17: In (a) and (c) open loop topography image and line cross sections and (b) and (d) hybrid mode topography image and line cross sections are shown for revealing the different dimensions of the calibration standard structures.

By looking at the calibration standard scans in the previous figures one can see a clear distortion at the start of each scan and at the start of each line.

One way of eliminating the incorrect calibration factor would be to simply use periodic scans of the calibration structure to update the static calibration factor, but this would not lead to a correction of the distortions at the line and scan start. Distortion correction algorithms were tested, but no systematic method of applying distortion correction to FM data was found.

Tip Shape Deconvolution

An AFM scan is effectively a convolution of the surface and the tip shapes and hence tip convolution artefacts are one of the most important errors. Since the AFM tip cannot be fabricated as an ideal delta function (which would be an ideal tip shape) a certain degree of image distortion can always be observed, depending on the relative size of the tip and sample. While scanning sharp features on the surface it is actually possible to see an image of the tip instead of the real surface. As we will see later, this effect can be used intentionally to investigate the tip shape.

A literature study reveals different methods to find the tip geometry, which then be used to either build a certainty map (showing where the sample was touched by a single part of the tip) or potentially to remove the errors via deconvolution. First of all one can use the manufacturer's specifications of the tip geometry, typically parameterised by the apex radius and angle. A second useful method is to determine the tip properties with an independent technique, such as electron microscopy. Clearly this latter is not possible for an instrument millions of kilometres from the Earth. SEM images were made of all tips before launch but these do not fully constrain the three dimensional tip shape and cannot be repeated in flight. The approximate shape and dimensions of the tips are known; they are approximately a pyramid with a ~10x10µm² base and a height of ~10 µm. A representative SEM image of a tip is shown in Figure 18 (a-b). One issue during fabrication was that the intended four sided pyramid in the end looks like a 3 sided pyramid. This shape is a result of either slight overarching of one or two crystal faces or a different orientation of the silicon wafer, such that not all faces etch with the same efficiency. Thus our tips are shaped like a truncated knife-blade, which can be seen in Figure 18 (a) and a representative final tip is shown in Figure 18 (b). These images cannot be used to accurately specify the tip radius or the apex angle due to the insufficient resolution and the limited viewing angle.

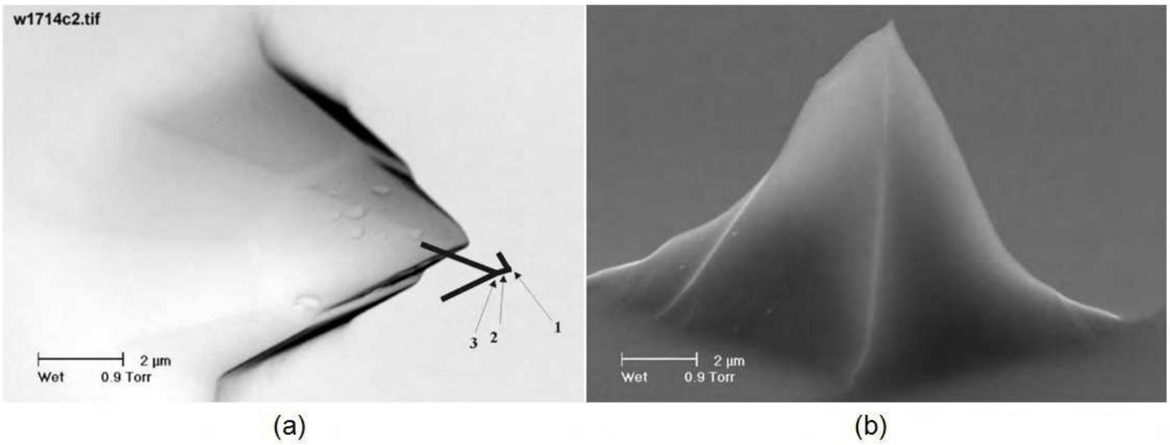


Figure 18: SEM images of the AFM tip before (a) the last etching step and (b) the final version of one tip at the flight model, revealing the tip shape to be formed out of a knife blade form to the final sharpness.

A third method for finding the tip geometry is to use a tip characterizer sample structured with spikes having a higher aspect ratio than the AFM tip. Both the Flight Spare model and the Flight Model are equipped with such a sample, an SEM image and schematic of which can be seen in Figure 19.

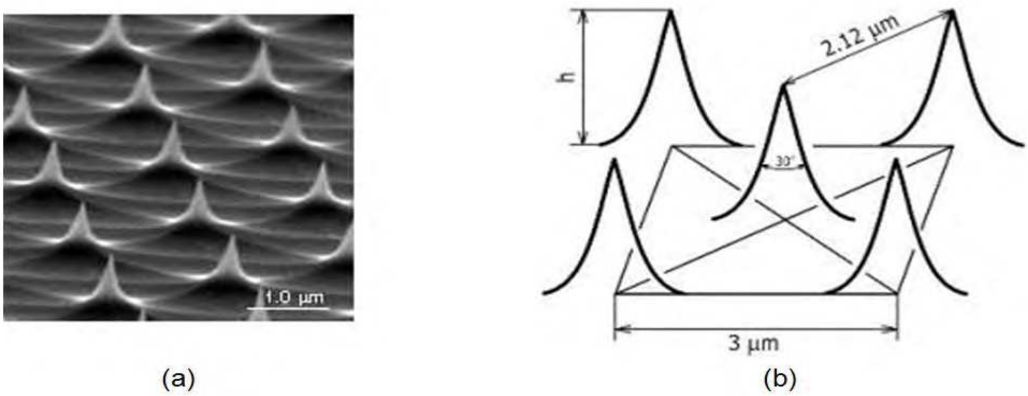


Figure 19: Tip imaging sample mounted at both the flight spare and the flight model. (a) SEM image and (b) schematic illustration showing the dimensions of the sharp tips used for imaging of the AFM tip.

As these tips have an apex angle of approximately 30°, they are (at least at the top part), sharper than the tip used for imaging. They are approximately 700 nm high, which limits the ability to characterize the AFM tip to this topmost area. Tip images of the flight model are shown in Figure 20 for different tips. As one can clearly see, all of them show a more or less triangular shape. As well as confirming the shape shown in the electron microscope images one can readily see the different states of tip wear. Since tip 11 had not been used for many scans, it is in very good condition (no obvious “double- tip” features, for example), whereas tip 5 shows attached particles and deformation of the tip. In this image one can also see one problem, which arose after tip 5 scanned unexpectedly high particles (and hit them from the side), of varying image quality and tip- sample interaction from top to bottom. Further contamination and abrasion can be observed for the tips 9 and 7, which are no longer usable for high quality scanning but can still be used for calibration purposes, for locating particles and for measuring statistical properties of particles, such as their height, that are not affected strongly by the tip artefacts.

In Figure 21 (a) and (c) one can see topographic images of small particles acquired with tips 7 and 9 respectively, showing an obvious convolution of the tip shape with the real particle shape. The particles have a size of approximately 2-4 µm and a height of ~2 µm and ~450 nm, respectively. In fact these sizes are very suitable for high resolution measurements and due to the fact, that there are sharp tips left, the ability to image the same area/particles with different tips gets essential.

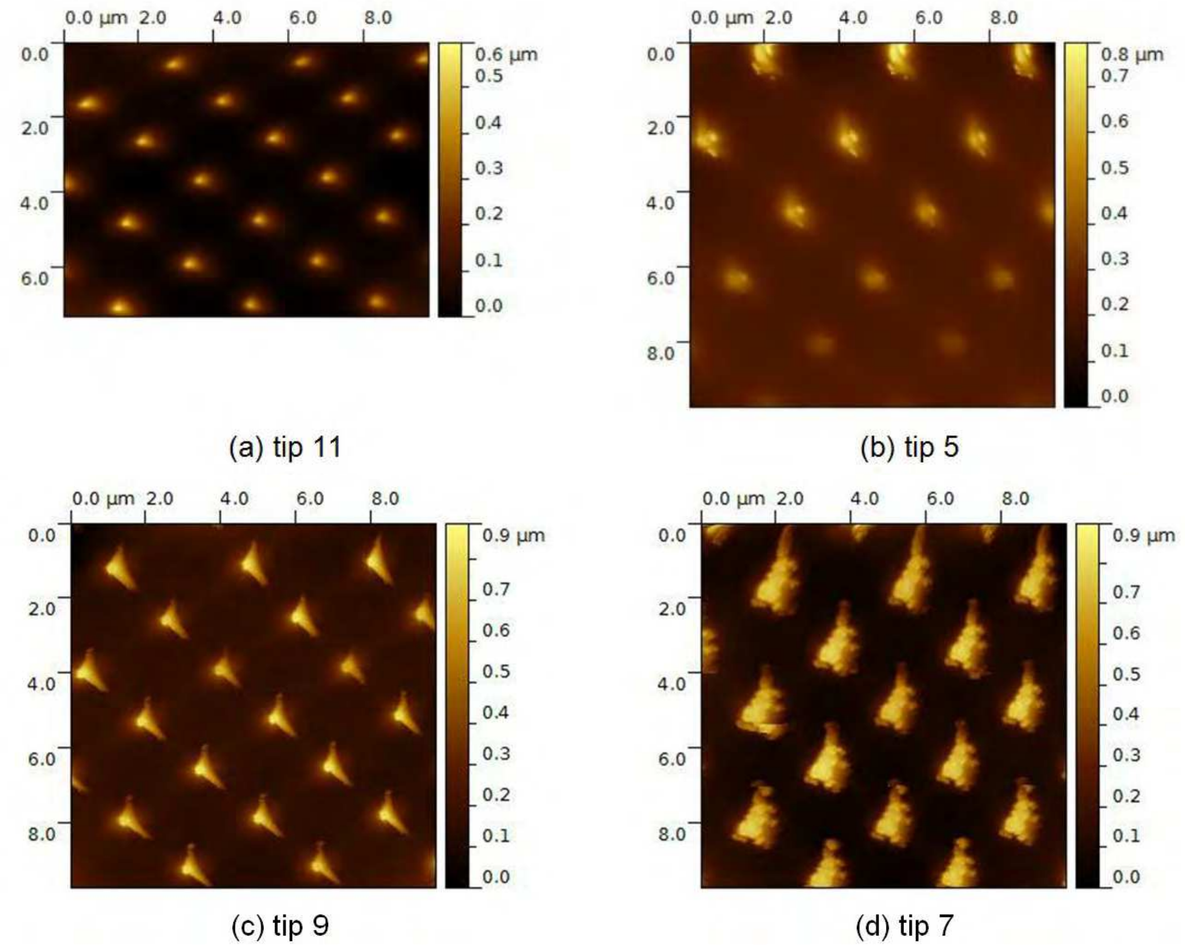


Figure 20: Tip image of tip 11, 5, 9 and 7. In (a) tip 11 shows nearly no wear and a very sharp and uncontaminated tip. Tip 5 (b) is contaminated with a few particles, but some change in image quality from top to bottom can be observed here. Tip 9 (c) shows a plateau and a blunt tip. Tip 7 (d) shows the most contaminated and worn status.

With these tip images one can use the algorithm published by Villarrubia (1994) to reconstruct the least upper bound of the real surface, which can be seen in Figure 21 (b) and (d). As one can see in both cases, the lateral dimension of the particles get confined, which is in good agreement with the algorithm of deconvolution. But especially in the corrected image with tip 7, shown in Figure 21 (b), one can see artefacts induced by this method. First of all the height of the particle should stay the same and not be decreased from ~2.2 µm to ~1.5 µm. The challenge is to find the right dimensions of the tip image to be used in the reconstruction. If the cropped tip is too large, the deconvoluted surface features severely decrease their height, whereas for a smaller section of the tip image, some features get cut off and not considered.

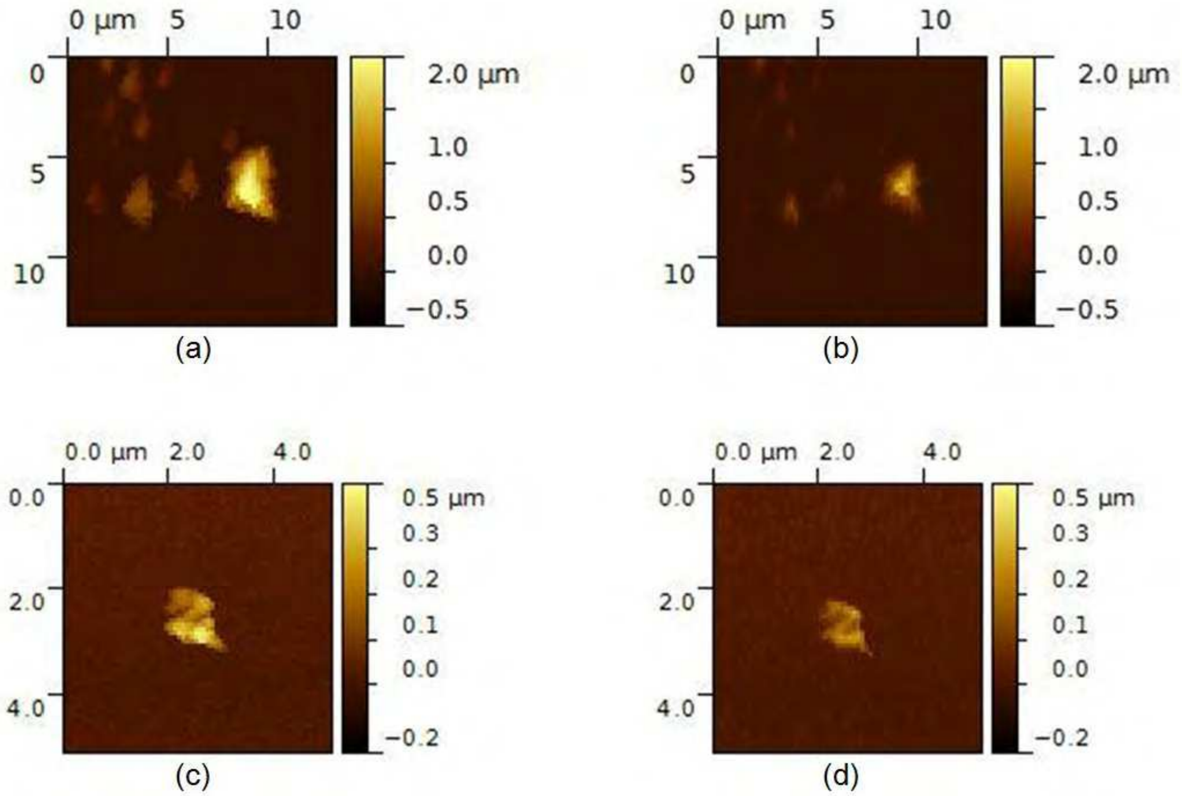


Figure 21: Topography image of a cometary particle with tip 7 (a) and with tip 9 (c). The particle size is in both cases in the order of 2-4 µm and the size is from approximately 450 nm to 2 µm for the particle in (c) and (a) respectively. (b) and (d) show the deconvoluted image where the tip was taken from figure 3.03. Both show a decreased structure height and other artefacts.

The second interesting feature which can be observed, is that an additional step arises due to the surface reconstruction. This step has approximately the height of the tip, which we get from the tip image. Figure 22 (a, b) show cross sections of the large particle from the image in Figure 21 (a) and (c) - note the different scale in height. The height of the steps in the cross section of the corrected image are in the order of 600 nm, very similar to the tip height.

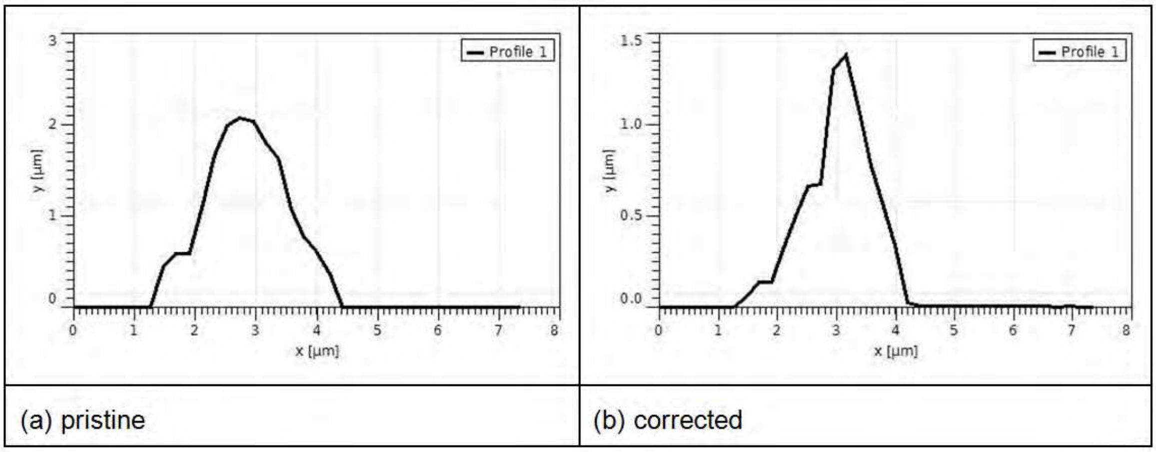


Figure 22: Line cross sections of the uncorrected (a) and corrected (b) particle showing a decreased particle height and an additional step induced at the post processing.

The tip imaging sample, which is used for visualization of the tip shape and its contamination, has only 700 nm high spikes, and thus only the top of the ~ 10 µm high tips can be imaged. With this limitation, and the fact that nearly all the particles are higher than this 700 nm, it is clear that a full deconvolution is not going to be possible. In addition, when the tip hits the sample the tip shape can change dramatically between each tip image and that it cannot be excluded that the shape is even different in between these tip images, is limiting the applicability of a tip deconvolution algorithm. For typical, rather flat, AFM samples the tip apex shape is most important. For the large cometary particles that MIDAS has encountered, the entire tip shape plays a role.

The more limiting factor in terms of tip shape seems to be contamination with dust particles during scanning. As can be representatively seen in Figure 23 by different tip images of tip 9, the amount of contamination is changing with time and thus the tip shape varies considerably. Sometimes the contamination seems to disappear, which can be observed between STP 42 and STP 47, which looks much cleaner than the previous tip image. This is probably caused by either the permanent oscillating behaviour of the cantilever (the whole array is vibrated, not just a single cantilever) or intentional frequency sweeps at the highest excitation levels, which leads to greater amplitudes, increasing the chances to get rid of the unwanted contamination. Later images of tip 9 show even more severe contamination due to scanning over exposed areas with a large amount of cometary material. Also this large amount of contamination is limiting the capabilities of a deconvolution, since it is very likely, that the tip shape is changing in between each scan to some extent.

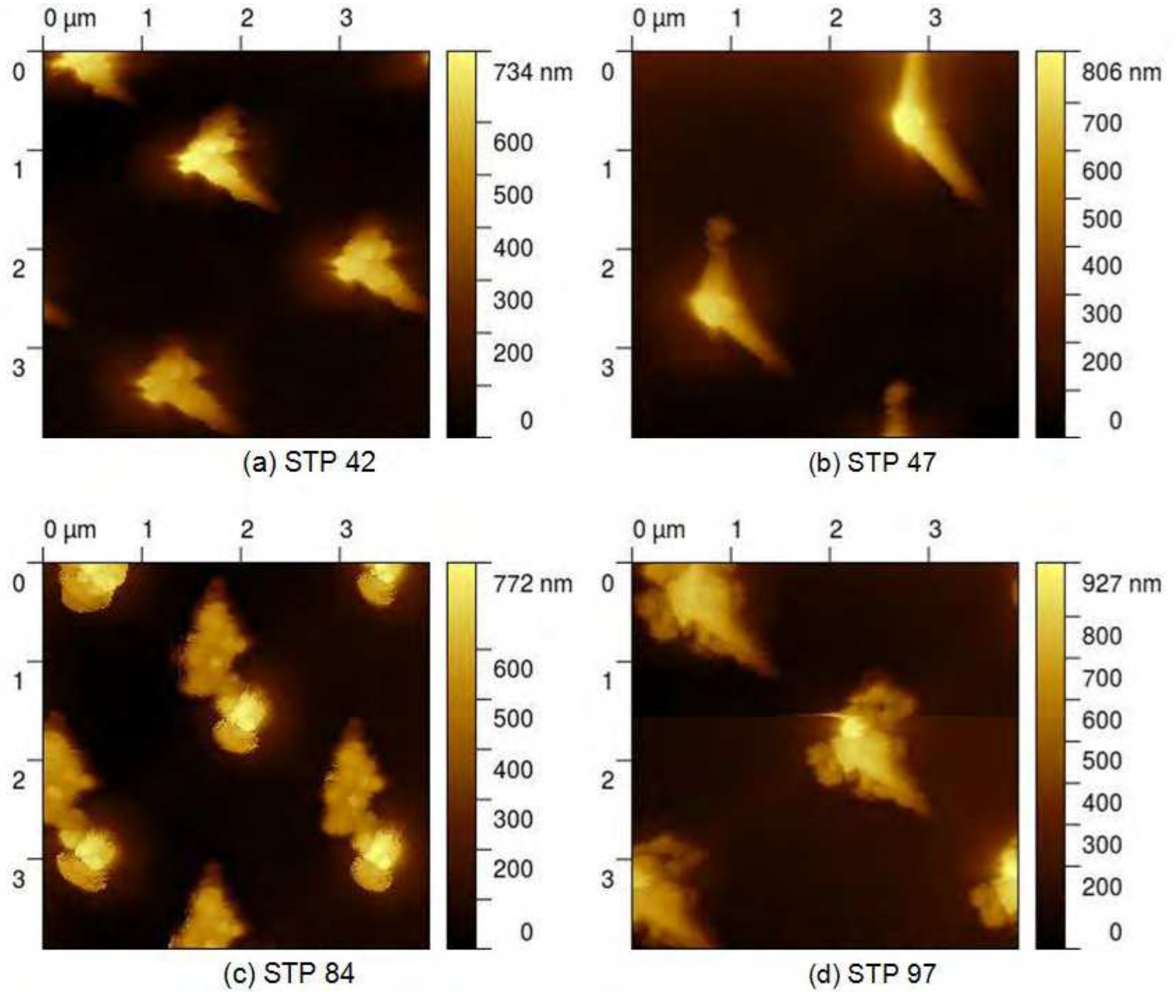


Figure 23: Tip 9 tip images from diverse STPs revealing a different amount of contamination, but tip wear seems not to be dominant.

Tip Resonance

MIDAS has 16 tips/cantilever installed, which are fabricated in the same way and thus should be very similar. As can be seen in Table 2, there are small differences in the resonance frequency, but a larger variation can be observed in the Q-factor, which is the resonance frequency divided by the half-width of the resonance peak. A higher Q-factor indicates a more sensitive cantilever, since a small shift in resonance frequency, when interacting with the surface, induces a large amplitude change.

Tip number	Resonance frequency [Hz]	Q-factor
1	83760	10340.74
2	84339	10542.38
3	84262	10943.18
4	89826	744
5	81807	2399.04
6	83254	363.08
7	88487	100.65
8	93374	nan
9	108705	224.09
10	85518	3734.42
11	86574	2905.20
12	95356	166.16
13	84748	4631.07
14	84165	5163.50
15	83695	4923.26
16	893494	5108.28

Table 2: Tip resonance frequencies and Q-factors from thermal vacuum data at 15° C.

In our case the values vary from approximately 100 up to above 10,000. In the first months of the mission the cantilevers with a rather low Q-factor, such as tip 7, and with an intermediate Q-factor, such as tip 5, were used, since it was desired to save the more sensitive cantilevers, and those with magnetic coat (1-4) to perform high resolution measurements of located dust particles. Comparing representative images in Figure 8 (a, b) of tip 7, as a low Q-factor tip, and Figure 24 (c, d) tip 5, as an intermediate/high Q-factor tip, one can clearly see that the higher Q-factor is somehow distorted to the right half, which can be seen in the topography scan, but much better in the phase image. This strange behaviour can only be observed for larger scans, such as the 80x80µm² scans shown here. Reducing the scan size to e.g. 20x20µm² results in nearly undistorted scans. Since MIDAS is an amplitude modulated atomic force microscope, the key difference between the high and low Q cantilevers is the response of the amplitude to frequency shifts. It has been observed throughout the mission that temperature changes can cause shifts in the resonance frequency, and hence amplitudes. To reduce this effect, a frequency re-tune at every line was enabled, which forces a sweep of the resonance peak and re-calculation of the operating parameters at the end of every line. Whilst this is helpful, it also increases the scan duration (a full eight- cycle frequency scan can take up to three minutes, and a scan can have up to 512 lines).

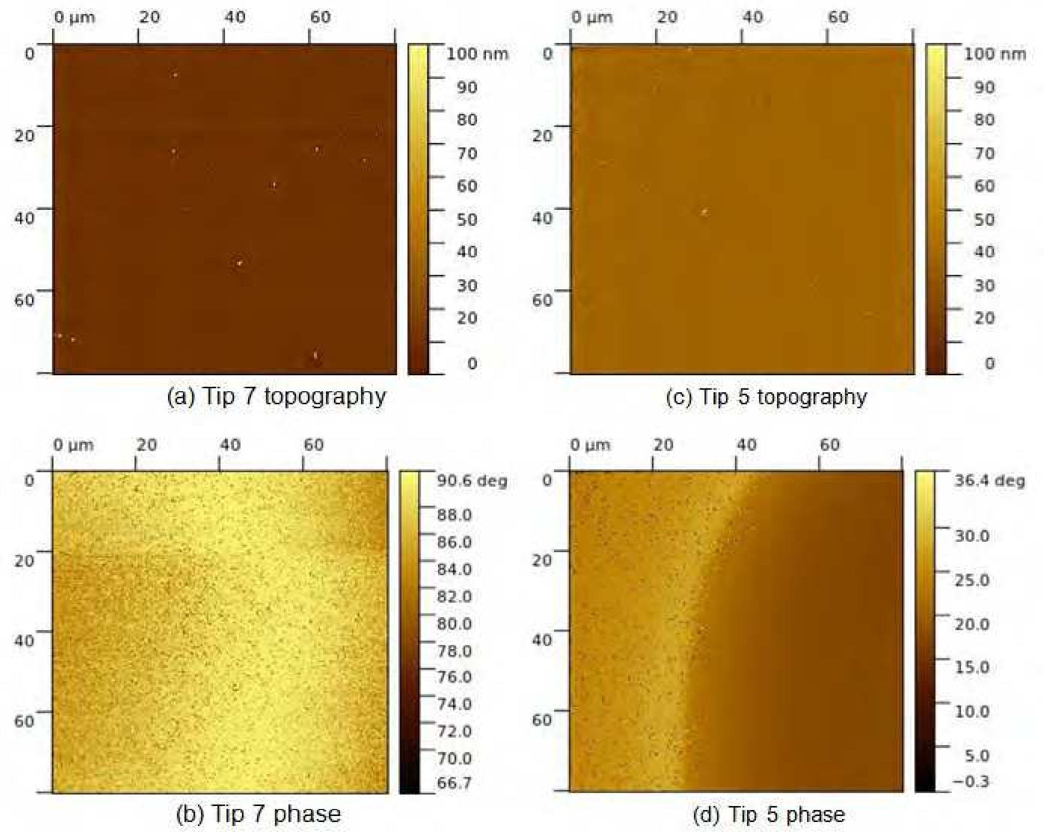


Figure 24: Comparison of tip 7 (a, b) and tip 5 (c ,d) topography and phase channels, revealing a distorted scan with the higher Q-factor tip 5 at the right half of the scan. The phase image is showing a severe transition from the left half of the image to the right.

Thus, as a next step to improve the image quality of the high Q-factor cantilevers, the scan parameters, in particular the set point and the working point, were adapted. To achieve a more stable regime, the working point was reduced from -90% down to -45% of the resonance amplitude (the negative means that the frequency is set to match the corresponding amplitude below resonance) and the set point was moved to a correspondingly lower value of 25%. Moving these values away from the peak of the resonance curve results in a smaller dependence of amplitude on frequency, and hence the cantilever is less sensitive to thermal and other drifts (but also, of course, less sensitive in general). A scan with these parameters with tip 14 can be seen in Figure 25 (a, b), which shows an X/Y calibration standard scan. This scan shows nearly no distortion in the topography image, and also the phase signal seems to be more stable, except for a small drift towards lower phases from the beginning of the image to the end. The plots of the resonance frequency with the default and updated set of parameters is shown in Figure 25 (c, d). As one can clearly see, the width of the peak is very narrow at the default parameter (c) working point, whereas it is clearly increased for the new set of parameters (d). As can be seen in the AFM image in (a ,b) this is clearly stabilizing the image quality and thus this set of parameters is used as default for the cantilevers with a high Q-factor.

Cantilever Positioning

The reproducibility of scan positions is critical to allow follow--up of images weeks or months in the future, and to allow different cantilevers to image the same part of the target. It became clear during the mission that there were several difficulties in re-positioning cantilevers with high accuracy. Firstly, some scans that were commanded to the same position did not show the same part of the target, despite the fact that all telemetry indicated that the cantilever should be positioned correctly. The only plausible cause for this is an issue with the sample wheel. Indeed it has been seen that the wheel sometimes “sticks” - it either fails to start moving, or else moves too slowly to find its reference position before a software time-out is triggered. To try and avoid this, an on-board software upgrade was added to re-attempt wheel moves should the timeout be encountered.

A second issue was encountered when switching cantilevers. The sixteen cantilevers are arranged on a linear array. To provide coarse X positioning and to choose a cantilever, the sample wheel is mounted on a linear stage. Thus to image the same part of the sample with a different cantilever, the wheel must be accurately moved along its axis by the distance between the two cantilevers. Ground calibrated values for the linear stage position to centre the cantilever on the wheel were used in the first part of the mission, but were found to be insufficient to re-position the linear stage to switch cantilevers within the field of view of the XY stage. Thus, at a first point, a linear stage re-calibration exercise was performed.

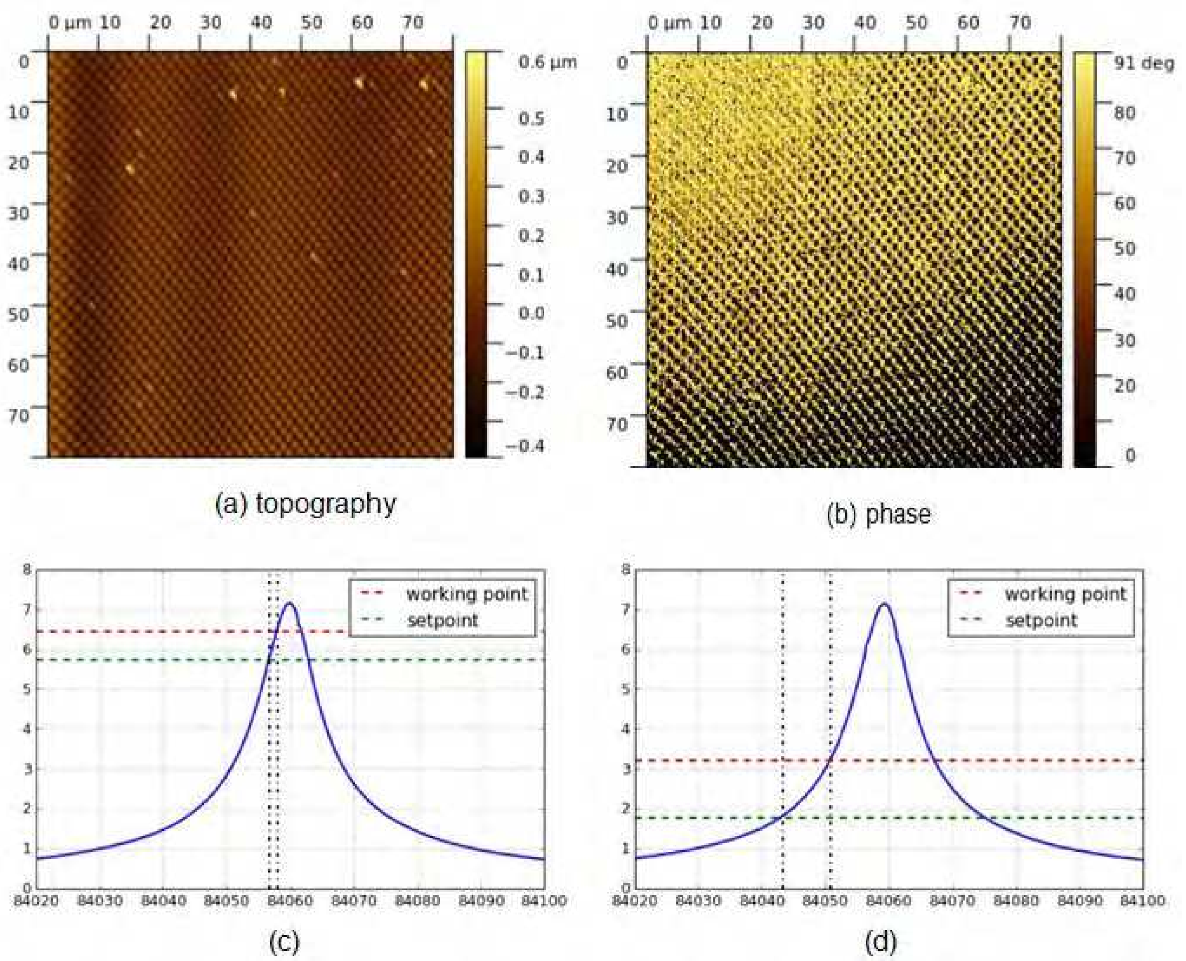


Figure 25: Topography (a) and phase (b) calibration standard image with high Q-factor tip 14, revealing the updated parameters to improve the image stability and thus the quality. (c-d) are showing the resonance peaks with the parameter settings marked by the horizontal lines for the default parameters (c) and the updated 'high Q' parameters (d). The vertical lines show the frequency at the working and setpoint, revealing a much wider window at the 'high Q' parameters, indicating to be much more stable against frequency shifts.

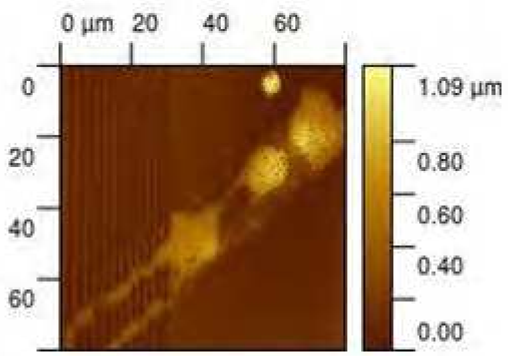


Figure 26: Topography scan of a noticeable structure, which was found at the Z calibration target at the end of the linear grid and used as a marker position to re-calibrate the linear stage.

Tip number	X offset (µm) (from centre)
1	350
2	365
3	375
4	390
5	365
6	370
7	370
8	345
9	285
10	270
11	275/290
12	285
13	No tip
14	295
15	330
16	No tip

Table 3: Measured X (from the facet centre) and Y (from tip 9 position) offsets.

A position on the Z calibration target was found, which served as a marker for the real position. This marker position was at the edge of the linear grating, where a contamination feature was found (see Figure 10) that provided an additional reference. Line scans with each tip were then performed at various linear stage positions to find this feature. The position of the edge was measured from the nominal centre position and should be at the same value for each individual tip. As Table 3 reveals, the measured offsets were sometimes greater than 100 µm. Since typical scans were 40 or 80 µm square, this confirms why the position was not repeatable when switching between some tips. The derived offsets were implemented in the planning code and as a result cantilevers switching was found to be very repeatable.

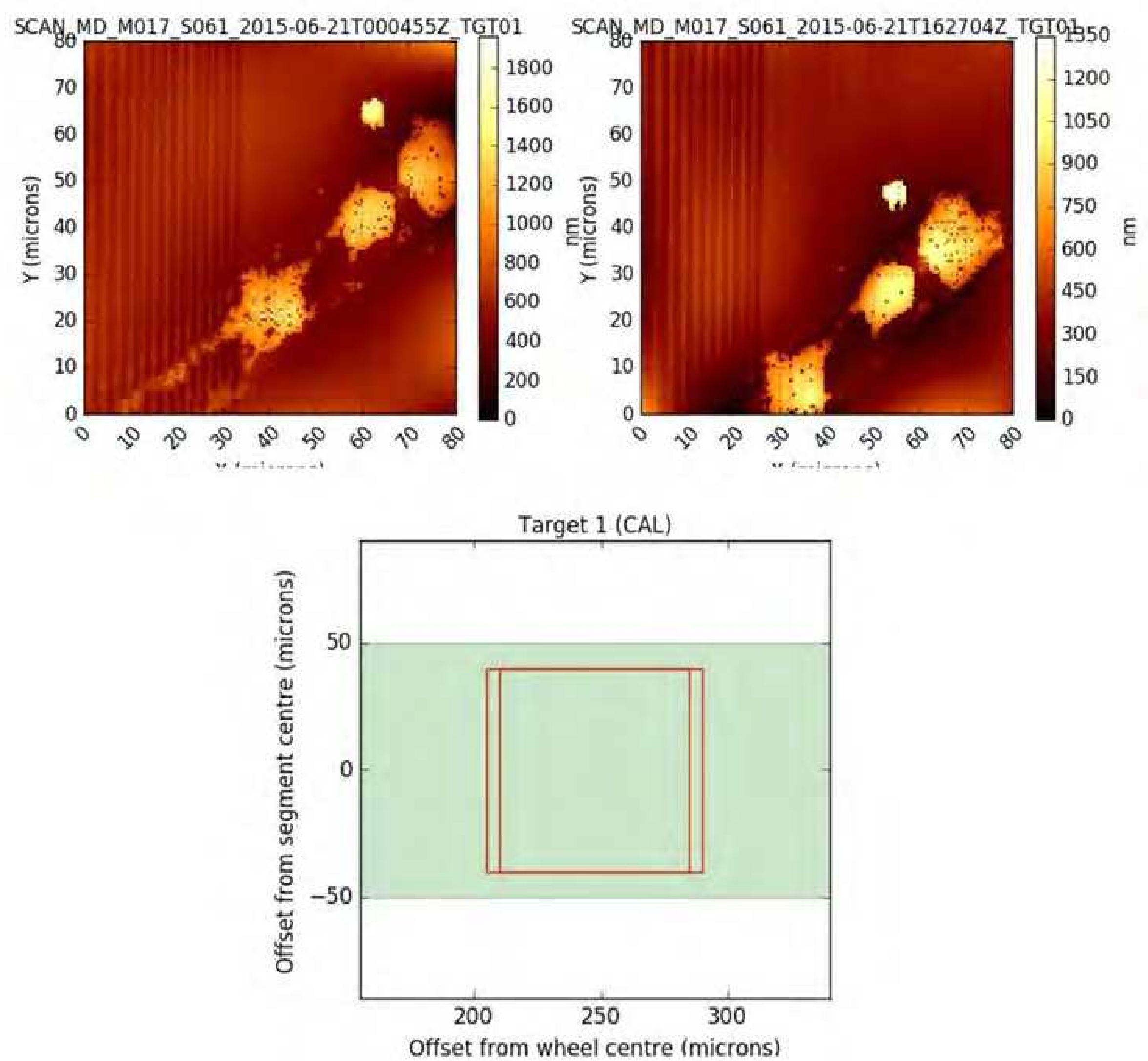


Figure 27: tip 10 (top left) and tip 15 (top right) scan of the edge finding feature, revealing a correct offset in X direction, but showing an offset in Y direction of approximately 15-20 µm. The bottom illustration is showing the X corrected positions, but the nominal Y position is still showing the same value, which is clearly not the case when looking at the two scans.

Other Key Operational Findings

● Always powering both cantilever blocks helps cantilever stability, usually only the active block is powered.

● Instrument should be thermalized prior to scans, when switched ON/OFF image distortions can be severe.

● Running the coarse approach mechanism and waiting some hours can help with this, this generates excess heat, but time is needed for thermal wave to reach cantilevers.

● Hybrid mode (using the remaining CSSC channel) is essential for best imaging and closed loop operation is best applied to the slow scan direction.

● Even using hybrid mode, some distortion/nonlinearity remains this distortion can be corrected by applying a polynomial correct after scanning the XY calibration target this method also calibrates images correctly into physical units.

● The previously assumed origins for open and closed loop are not identical, 4 corrections have been performed by recording and fitting to HV channels.

● Tip imaging by itself provides an excellent measure of tip wear blind tip estimation can help, but is difficult to optimise.

Summary of STPs

Operational planning of Rosetta instruments takes place on four different time scales. The key timescales for MIDAS are the Medium Time Planning (MTP) cycle in which resources such as power, data and spacecraft pointing are assigned, and the Short Term Planning (STP) cycle in which detailed instrument operations (i.e. individual telecommands) sequences are derived, checked and uploaded. Each MTP covers a period of about one month and each STP typically one week; both are numbered sequentially from the hibernation exit. Appendix A gives a list of dates and times of each STP start and end, and which STPs are contained in each MTP. Appendix C contains a glossary of common terms and acronyms used in this report.

Here follows a summary of all STPS from the comet escort and extended mission phases. All image scans per STP are listed in the summary tables found at the end of the document. Image scans are referred to by the STP number and the scan number in the summary tables, e.g. STP093-1.

STP003

Planning:

1. Scans of XY calibration target, main scan X and main scan Y

   main scan direction in X failed scan, main scan in Y direction completed.

2. Prescans different targets.

   Completed this STP

Additional Notes:

STP003-1: RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_001_ZS

Scan failed, Z piezo continually extends during creep avoidance, and get saturation. Also cantilever amplitude increases dramatically, possibly with temperature.

STP003-2: RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_002_ZS

Odd imaging. Repeat in a later STP.

STP003-3: RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_003_ZS

Cantilever tuning failed causing aborted scan.

STP004-9: RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_009_ZS

Frequency threshold not found, scan failed.

STP004

Planning:

Prescans various targets.

Additional Notes:

STP004-2: RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_016_ZS

Failed due to frequency scan fail.

STP004-3: RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_018_ZS

Z piezo has reached maximum extension at end of image.

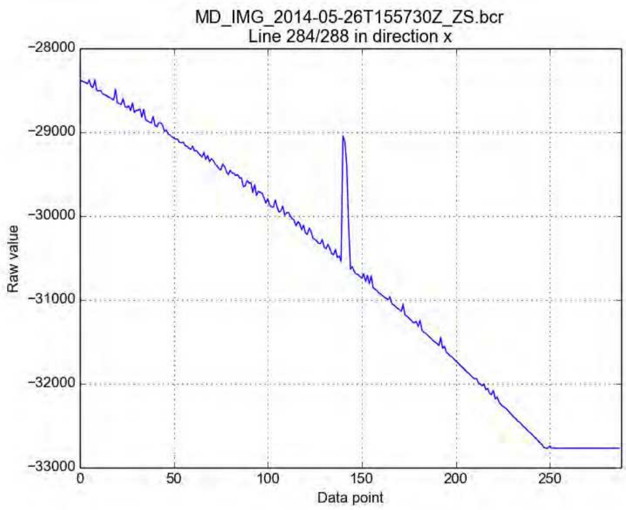


Figure 1. Z piezo extension (y axis in raw instrument values) during scan STP004-3, showing Z piezo reaching maximum extension towards the end of the scan.

STP004-6: RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_024_ZS

Scan completed. Clear contamination features. Odd height feature at centre of scan, likely due to particle stuck to the tip during scanning the central region causing change in retraction height of Z piezo.

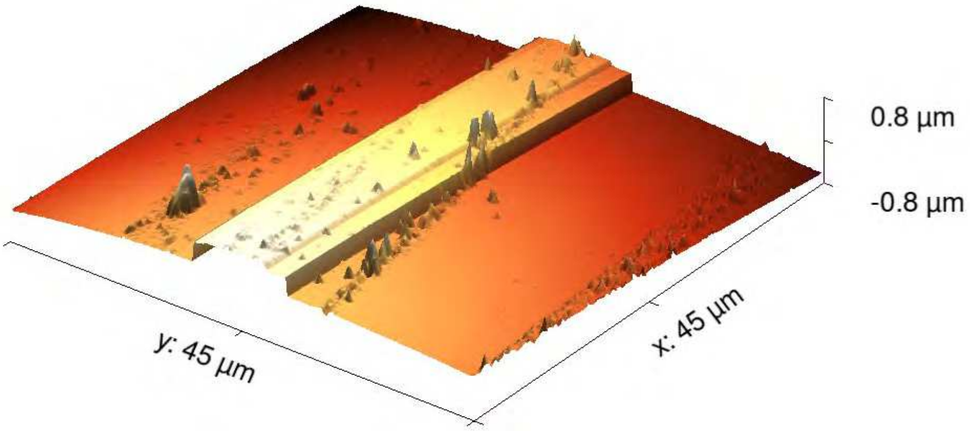


Figure 2. 3D image of STP004-6 showing odd height feature at centre of target and contamination features.

STP005

Planning:

Prescans of various targets. Completed.

STP006

Planning:

Various prescans. Completed.

STP007

Planning:

Coarse and fine scans targets 7 and 8.

STP008

Planning:

Try scanning different areas of target 8 and find overlap between scans. The commanded overlap is not obviously identifiable in the completed images.

STP009

Planning:

Try scanning different areas of target 8 and find overlap between scans. The commanded overlap is not obviously identifiable in the completed images.

STP010

Planning:

Try scanning different areas of target 8 and find overlap between scans. The commanded overlap is not obviously identifiable in the completed images.

STP011

Planning:

Prescans target 10.

STP012

Planning:

Prescans target 11.

STP013

Planning:

Target 5 scans.

STP014

Planning:

Scans of target 7.

STP015

Planning:

Scans of targets 7 and 12.

STP016

Planning:

Scans of target 13.

STP017

Planning:

Scans of target 14.

STP018

Planning:

Scans of target 10. First scans after exposure.

STP019

Planning:

Scans of target 10 using new tip. Prescans of target 15.

STP020

Planning:

Scans of target 10 after exposures. Continue pre-scanning target 15.

STP021

Planning:

Exposures. Continue scanning target 10.

STP022

Planning:

Exposures. Continue scanning target 10.

STP023

Planning:

Exposures. Continue scanning target 10.

STP025

Planning:

Exposures. Continue scanning target 10.

STP026

Planning:

Exposures. Continue scanning target 10.

STP027

Planning:

Continue scanning target 10.

STP028

Planning:

Exposures. Scan target 10 areas covered in prescans.

STP029

Planning:

Continue scanning target 10, using tip 7 to be sure same positions on target scanned.

STP030

Planning:

Continue scanning target 10.

STP031

Planning:

Continue scanning target 10.

STP033

Planning:

Re-image particle seen in STP029. Exposure.

STP034

Planning:

Resonance frequency check of all cantilevers (2 Hz coarse step). Continued exposure.

STP035

Planning:

Start scanning (before exposing target) areas on target 12 with tip 7. Try to image and/or clean cantilever 5 using tip calibration target.

STP036

Planning:

Continue scanning areas on target 12. Try to image and/or clean cantilever 5 using tip calibration target.

STP037

Planning:

Repeat scans from STP033. Expose target 12.

STP038

Planning:

Continue exposure. Repeat target 12 overview scan with cantilever 9. Repeat 80x80 μm scan of the two-particles on facet 10 with cantilever 5.

STP039

Planning:

- Complete scanning areas on target 12.
- Leave 5 hours for OBSW upgrade.
- Repeat frequency survey with updated frequency calculation.
- Re-image STP036-4.

STP040

Planning:

- Expose target 12.

STP041

Planning:

- Expose target 11.
- Repeat STP038-1.

STP042

Planning:

- Tip image of cantilever 7
- XY calibration, tip 7
- Amplitude calibration at different excitation levels.
- Pre-scan of a new target, using cantilever 11

STP043

Planning:

- Expose before and during closest approach
  - target 11
- Scan target 11 with cantilever 11
  - area pre-scanned in STP042
- Tip calibration scan of tip 11

STP044

Planning:

- Following from STP041
  - seen ~4 particles of ~400 nm height to follow-up
  - target 12, tip 9
- Pre-scan target 14
- Expose target 14 around zero phase / CA

STP045

Planning:

- Reboot during OCM
- Prepare cantilever 10
  - amplitude calibration (control data)
  - tip calibration
- Use cantilever 10 to pre-scan a new facet - facet 13

STP046

Planning:

- Following from STP043 (exposure during closest approach, failed scans) and STP042 (odd tip 11 behaviour)
  - Investigate cantilever 11
    - multiple frequency scans with same extent, and only 6 cycles
    - repeat failed amplitude calibration
    - repeat NC scans
    - check behaviour of Z piezo
- Profile cantilever 13
    - frequency sweeps
    - amplitude calibration
    - tip image
    - repeat pre-scans of facet 11

STP047

Planning:

- Linear stage calibration (move to min and max positions, record LVDT)
  Completed this STP
- Tip image of cantilever 9 high and low resolution
  Completed this STP
- Follow-up of exposure in STP044
  Completed this STP
- Linear stage calibration with adjusted retraction height
  Completed this STP
- Expose facet 14
  Completed this STP

STP048

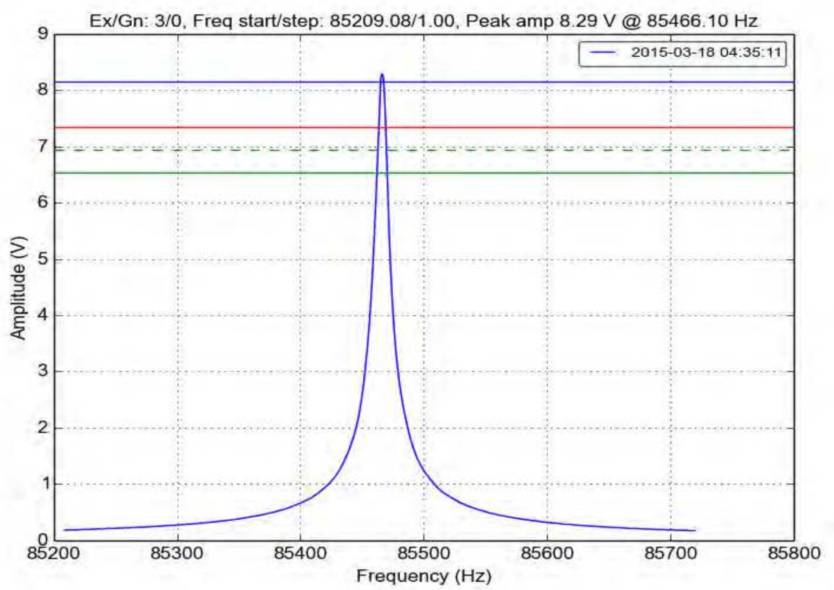
Planning:

- Repeat facet 13 pre-scan with cantilever 10, higher excitation level
- Repeat tip image with cantilever 10, excitation turned up
- Expose target 13 (2 days)
- Pre-scan large area of facet 6 at high resolution with cantilever 10, high excitation, before zooming at centre
- Attempt to find fluffy particle with cantilever 7 target 12

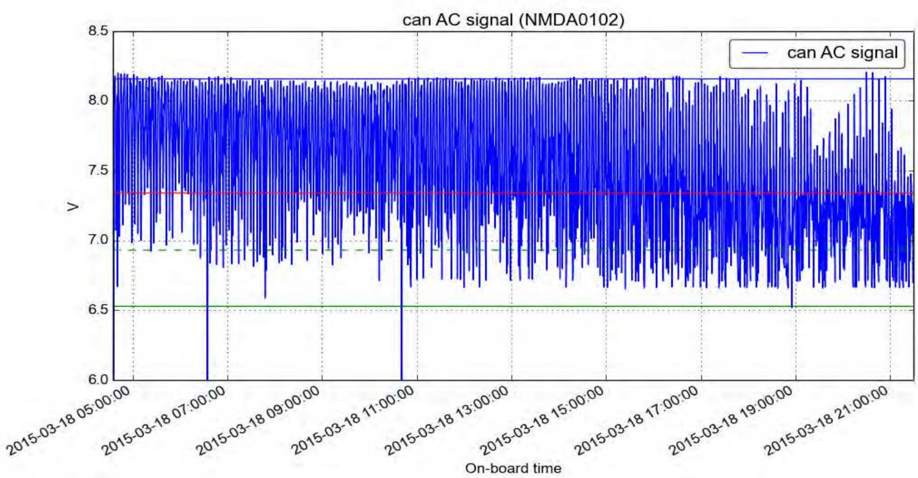
Additional Notes:

STP048-1. RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_018_ZS

Frequency scan at the start:



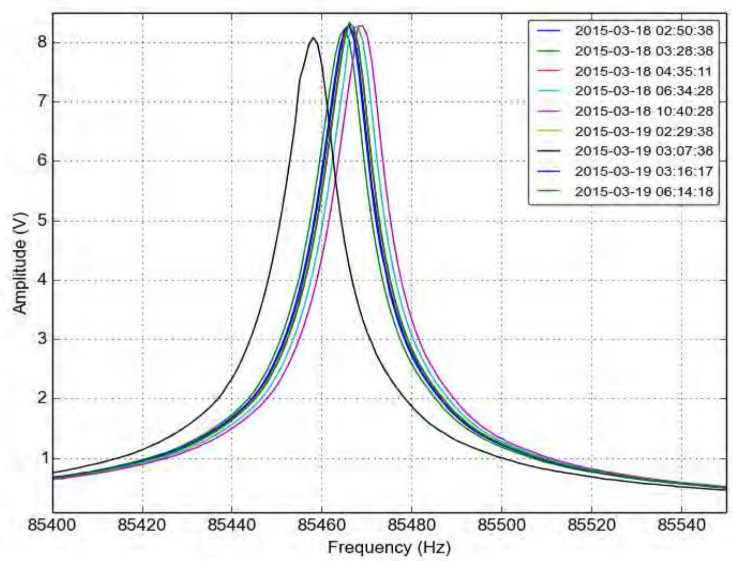
Now looking at the cantilever AC value during this scan:



It looks as though the amplitude is often going through resonance. Either the resonance frequency is drifting, or the driving frequency is not stable... Possible ways to improve:

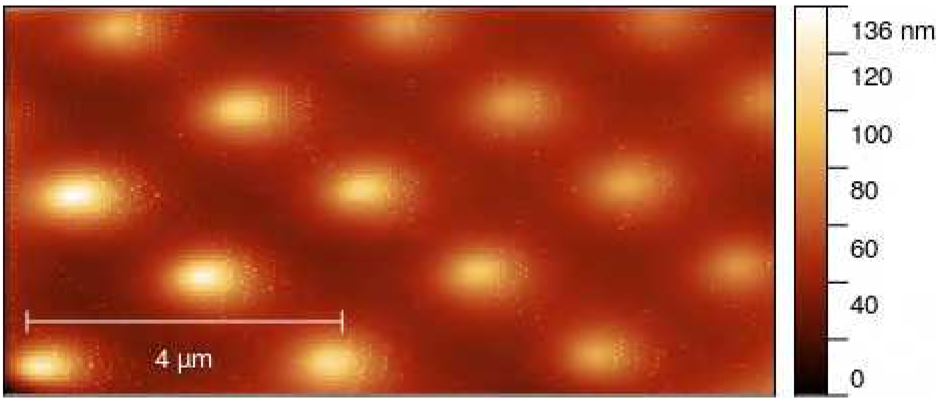
- if it is transients, increase the dwell times (currently default 50ms)
- decrease the set point (make a more "solid" contact)
- set frequency re-tune every line

In any case we can look at the frequency scans so far to estimate what drift that could cause:



STP048-2. RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_020_ZS

Tip image, also using higher excitation and start frequency
Scan worked OK - one re-tune in the middle. Crop of the second half:



Clearly this is in some way reflective of the tip shape, but the image is very noisy and the height is very small.

Lessons learned:

1. 22 frequency scans with cantilever 10 and no glitches - seems that setting the start frequency first helps
    1. now set as the default in future planning
2. all scans with cantilever 10 useless due to high Q-factor and "jitter" in resonance curve

STP049

Planning:

- Repeat linear min/max test
    - this time enable the linear LVDT power after the move
- Repeat of NC approach curve (failed twice), cantilever 11
- Control data of cantilever 13 (no good curves until now) with decreasing set point
- Control data of all unused cantilevers at all usable excitation levels
- Prescan target 11
- Expose facet 11

Lessons learned:

Increasing excitation helps for some cantilevers, but for most high Q will have to decrease setpoint

No change in the absolute movement of the linear stage as measured by the linear LVDT

STP050

All operations lost due to spacecraft entering safe mode.

STP051

Planning:

- Switch on after safe-mode
- Frequency scan with cantilever 6 to initialise subsystems
- Four line scans approach aborting before surface - to warm up
- Tip scan of cantilever 7
- Scan facet 13 with cantilever 7
    - have been exposing this during OCMs
    - no good recent pre-scans
- Repeat with cantilever 10
    - not only set start frequenct and reduced set point, but frequency re-tune every line and with settles time increased
- Expose facet 13

STP052

Planning:

- Control data tests of cantilever 5 (all useable excitation levels)
  Completed this STP
- Scan of the "first" found with cantilever 5 to check state
    - using new functionality - large re-tune window, set frequency first, then lower setpoint
  Completed this STP
- Line scans of height calibration with cantilever 5 for linear stage calibration
  Wrong target was commanded
- Scan of XY calibration target with cantilever 10
- Large XY calibration target scans (small ones in STP051)
- Scan some of facet 14 (already exposed) with tip 14

STP053

Planning:

- Repeat height calibration edge finding with correct facet
    - cantilever 6 (to compare with PC4)
    - cantilever 5
    - cantilever 7
    - cantilever 9
- Repeat largest STP041 particle + feature vector
    - covering larger area to find particle
    - cannot be too large or else frequency vector won't work so well
    - expanded to ~25 µm width
- Tip image of cantilever 13
    - looks like there is no tip left
- Repeat coarse overview scan of facet exposed during safe-mode
    - lower safety factor, lower setpoint, increased dwell-times
- Repeat the scan of particles seen with cantilever 9
    - with reduced retraction accounting for known particle heights
- Repeat again with smallest linear stage offset
    - using 1 µm (5/6 times the smallest step)
- Coarse scan of facet 6 (silicon)
    - with cantilever 10, low set point
    - before we do a zoom in (before exposure)

STP054

Planning:

- Re-scan STP-47-3
    - saw two particles before - one possibly outside of pre-scan range?
    - cantilever 9
    - and run the feature vector
- Expose facet 13 during closest approach
- Pre-scan of target 21 with cantilever 10
- Scan facet 12 with cantilever 10

STP055

Planning:

- re-scan facet 14 with cantilever 14 (to investigate these odd features)
    - follow-up to STP052 scan
    - increase the dwell times to 100 ms
    - and check if particle was seen in pre-scans
    - if not try a zoom (with frequency vector)
        - frequency vector to look for feature with >50 points, 300% zoom
            - ran with step size of 1
            - no obvious features
            - lots of frequency re-tunes
- line calibration scans based on results from STP053
    - cantilever 6 - going to negative LVDT values (find the other edge)
    - cantilever 6 - use the case where we found the pattern edge, shift by ~10/20 µm
    - cantilever 5 - repeat with increased dwell, reduced setpoint
    - also further in the positive direction +400
        - check approach and set app_max
    - cantilever 7 - extend in the positive direction to + 400 µm
    - cantilever 9 - repeat +200 scan (think we've found the edge)
    - repeat for 10, 11, 14
    - make sure to add "high Q" parameters
- repeat facet 11 with cantilever 14 pre-scan to check for particles after safe mode exposure
    - assuming no large particles "hidden" by odd features
- Repeat XY calibration with tip 10 (from STP052)
    - but using increased dwell-times
    - *Failed*
- Scans with cantilever 7 target 12 outside of area where we have already found particles
    - but have pre-scans - same linear positions

STP056

Planning:

- Reboot instrument
    - *Completed*
- Tip image of cantilever 9
    - *Completed-distortion due to reboot*
- XY calibration tip 14
- Repeat cantilever 9, facet 12 scan
- Test for wheel rotation - using the XY calibration sample with tip 9
    - run 3 times, with no linear stage shift between calls, rotating wheel several times between scans to test for changes in accuracy of positioning
- Target 10, tip 7 re-scan STP033-2

STP057

Planning:

- Tip image tip 5, repeat scans from STPs 53, 54, 57

STP058

Planning:

- OBSW upgrade - 5 hours starting at 09:30 onboard
- Tip image of cantilever 10
- Follow-up of STP054-4
- Repeat line scans showing odd slopes with control data enabled
- Repeat XY calibration scan with cantilever 10 (from STP052) with increased dwell times
    - repeat of failure in STP055

STP059

Planning:

- Line scans in Y to investigate possible wheel movement problems
- Look at cantilever repositioning without wheel movement
    - now we know the exact offsets from the line scans, using the edge of the height calibration sample
    - e.g. cantilevers 6 and 7 - both with offsets of ~370 µm
- Failures in STP055 and STP056 - repeat
    - e.g. - Scan centre of facet 11 with cantilever 14 - exposed in safe mode, odd coarse scan, but not obvious large particles
    - but avoiding WOLs
- Contact mode approach and line scan test
    - *Failed*
- Pre-scan of target 21 with cantilever 10
    - *Failed*

STP060

Planning:

- Frequency scans with phase for all cantilevers
- Scan with a high Q cantilever with LVDT switch on
    - add extra command between approach and full scan start
    - use facet 11 with tip 14 - low res, same as STP057
    - switch control data on for this image
    - enable with instrument setup AND in the full-scan command
- Follow up of STP054-2
    - tip 9, target 14
    - zoom on particles
- Line scans with high Q cantilevers + control data to check for low excitation/WP/SP combinations
    - find new set of default parameters to give good scans and reduce tip wear

STP061

Planning:

- Repeat tip 16 edge finding with different parameters
    - repeat of STP058 where "contrast" decreased over lines
- Tip image of cantilever 10
    - repeat of STP058 post OBSW
- Repeat lines scans from STP058 (odd slopes, with control data; varying parameters)
    - failed due to new sw_flag
- Repeat XY calibration with cantilever 10
    - ran in STP058, but strange contrast change again
- Repeat STP059 line scans to investigate wheel movement
    - failed in STP059 due to sw_flag
- Repeat contact mode scans - line + control + images
    - for image use repeat of STP059 "repeatability" scans with cantilever 9
- XY scan of cantilever 10? With threshold mode?
- Image scan of height calibration edge with difference cantilevers to check location finding, expanded in X
    - previously 64x128 scan (40x80 µm) in STP059

STP062

Planning:

- Repeat STP060-2 do we see the same particles
- XY calibration scans
- Pre scans of new facet with new tip
    - facet 22, tip 10
    - hybrid mode and main scan Y
- Scan facet 13 (exposed in recent STPs)

STP063

Planning:

- Repeat 10x line scans in Y to check for wheel issues
    - *failed in STP061 since app_max was set to 0.0*
    - REMOVE LINEAR STAGE MOVEMENTS
- Repeat contact mode line scan with control data
    - failed last time due to abs approach after setup in ITL template
- Image target 10 with cantilever 5
    - repeat of failed scan in STP060
- Repeat of tip image of cantilever 14
    - failed in STP060
- Repeat some of the cantilever 14 line scans with a lower
    - to avoid saturation and hunting
- Repeat 16 edge finding - again?
    - with what new parameters +ve working point
    - even lower working point?
- Second facet pre-scanned with another tip
    - -> to get into a 2 branched scheme again at some time
    - cantilever 14, target 21

STP064

Planning:

- Repeat large scan showing two particles (follow ups that failed in STP062)
- Edge finding with cantilever 8 (contact mode)
- Edge finding with magnetic cantilevers (1-4)

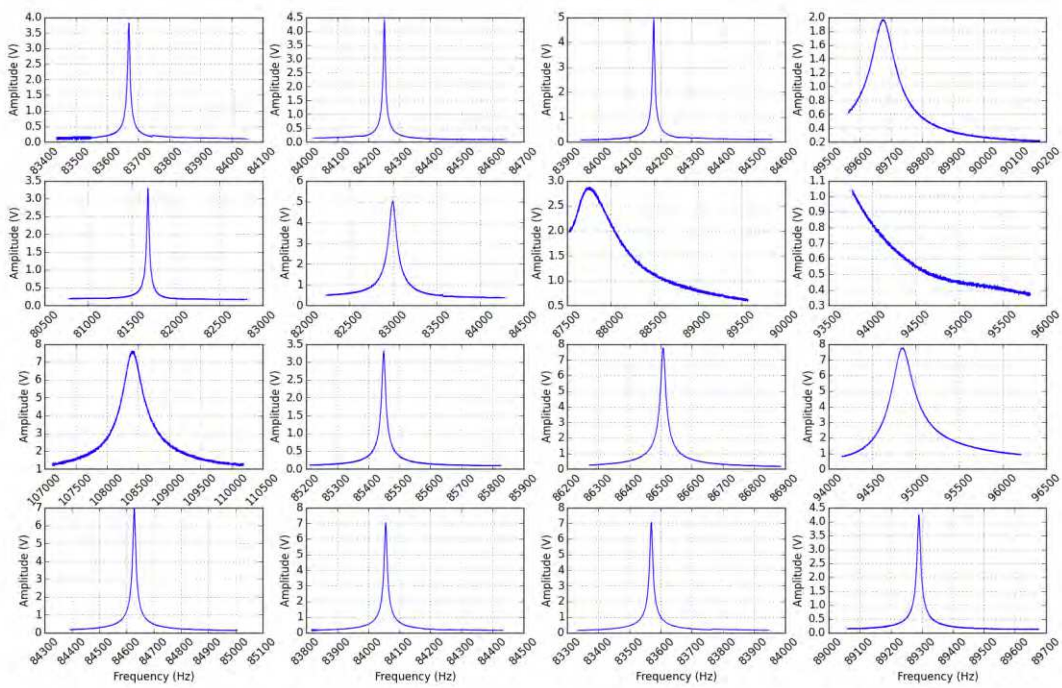
STP065

Planning:

- Contact mode approach and line scan with control data (failed in STP063 due to bad template)
- Repeat scan of target 10 with cantilever 5, follow-up to STP052 and STP060 and STP063
- Frequency survey of all cantilevers using new coarse and fine step sizes
- 80x80µm scan of target 21 with cantilever 14, mainscan Y, hybrid mode. Offset 128 µm
- Diagnostic scans of facet 11 with cantilever 14, various retraction heights and settle times
- Scan of target 10 with cantilever 10 (originally scanned with 5), tip offset 250 µm
- 80x80µm scan of target 21 with cantilever 14, mainscan Y, hybrid mode. Offset -128 µm
- 80x80µm scan of target 12 with cantilever 10, -50 µm tip offset
- 80x80µm scan of target 12 with cantilever 10, -114 µm tip offset
- 80x80µm scan of target 12 with cantilever 10, -178 µm tip offset
- 80x80µm scan of target 12 with cantilever 10, -242 µm tip offset

Additional Notes:

2015-07-15 13:25:00 : Frequency survey of all cantilevers using default parameters



STP066

Planning:

- Follow-up scan STP058-2
- Tip calibration scans
- Coarse scan of facet 13
- Pre-scans of facet 22 and 21

STP067

Planning:

- High resolution edge finding scans (5x 20µm lines with 39nm/pixel resolution per cantilever) - tip 6
- Repeat scan of target 10 with cantilever 5, follow-up to STP052, STP060, STP063 and STP065
    - *FAILED, Frequency scan resulted in amplitude too low*
- Tip 9 pre-scan of target 5
- High resolution edge finding scans (5x 20µm lines with 39nm/pixel resolution per cantilever), tip 5
- 4x4 tile scans with tip 14, 32x32 (40x40 microns) each
- High resolution edge finding scans - tip 7
- Tip image in contact mode (tip 8)
- Cantilever 16 line scan of the height calibration sample testing +45% WP
- High resolution edge finding scans (5x 20µm lines with 39nm/pixel resolution per cantilever) - tip 8
- High resolution edge finding scans (5x 20µm lines with 39nm/pixel resolution per cantilever) - tip 10
- Scan of target 10 with cantilever 10 (originally scanned with 5), tip offset 250 µm - tuning centre
- High resolution edge finding scans (5x 20µm lines with 39nm/pixel resolution per cantilever) - tip 11
- Scan of target 10 with tip 10, moving one segment in either direction
- High resolution edge finding scans (5x 20µm lines with 39nm/pixel resolution per cantilever) - tip 12
- High resolution edge finding scans (5x 20µm lines with 39nm/pixel resolution per cantilever) - tip 14
- High resolution edge finding scans (5x 20µm lines with 39nm/pixel resolution per cantilever) - tip 15
- Tip 9 pre-scan of target 5

STP068

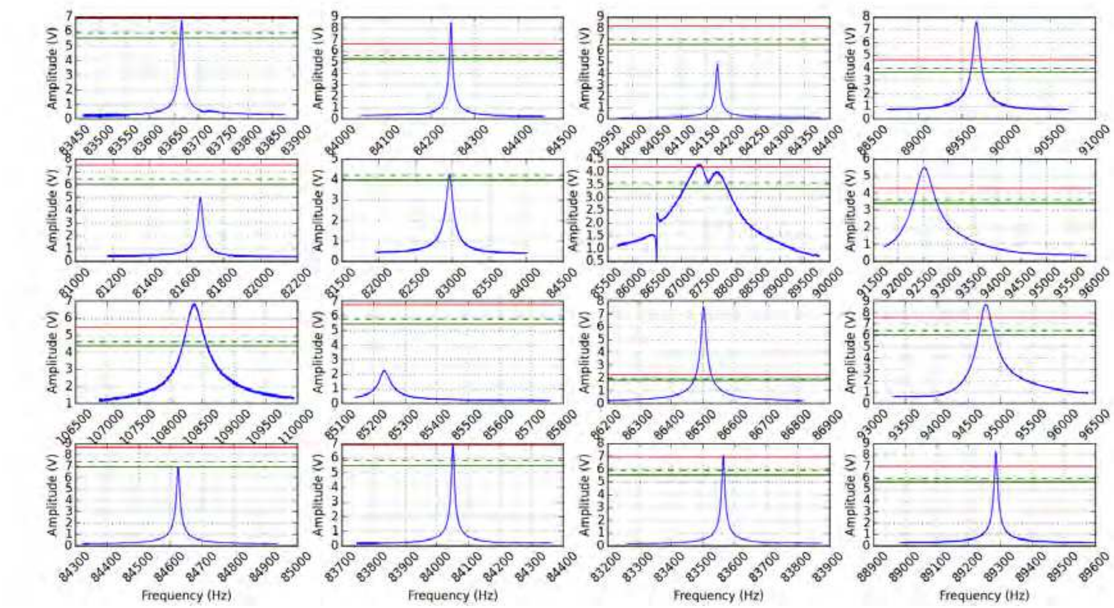
Planning:

- Wheel tests (5x rotations with 3 different pulse widths)
- Tile of 10x10 µm pre-scans, 10% overlap, 512x512 of target 21. Tip offset -64 µm
- 40x40 µm pre-scans, 256x256 of target 21 - tip offsets -64 and +64 µm
- Expose facet 21

STP069

Planning:

Frequency scan of all cantilevers with updated parameters



STP070

Planning:

- Continuing exposure of target 21 from STP069

STP071

Planning:

- Continuing exposure of target 21 from STP069

STP072

Planning:

- Tile of 10x10 µm pre-scans, 10% overlap, 512x512 of target 22. Tip offset +64 µm
- 40x40 µm pre-scans, 256x256 of target 22 - tip offsets 0 and +64 µm
    - *Target 2 incorrectly scanned*

STP073

Planning:

- Continued exposure target 22

STP074

Planning:

- Continued exposure target 22

STP075

Planning:

- Post-exposure scan of target 21 with tip 14. 80x80 µm scan w/ 64x64 pixel @ tip offset 0.0
- Post-exposure scan of target 21 with tip 14. 80x80 µm scan w/ 64x64 pixel @ tip offset -64.0
- Post-exposure scan of target 21 with tip 14. 80x80 µm scan w/ 64x64 pixel @ tip offset +64.0
- Post-exposure scan of target 22 with tip 14. 80x80 µm scan w/ 64x64 pixel @ tip offset 0.0
- Contact mode scan of target 6 (tip 8), 8 um w/ 288x288 pixel
- 2x2 tile of contact mode scans of target 6 (tip 8), 20 um w/ 256x256 pixel

STP076

Planning:

- 2x2 tile of contact mode scans of target 6 (tip 8), 20 um w/ 224x224 pixel
- Contact mode scan of target 6 (tip 8), 8 um w/ 288x288 pixel

STP077

Planning:

- Follow-up scan of target 21 with tip 14, 80x80 um, 224x224 pixel, tip offset 0 microns
- Follow-up scan of target 21 with tip 14, 80x80 um, 224x224 pixel, tip offset -64 microns
- Zoom of the centre of target 10, tip 5. 8x8 um, 256x256 pixel
- Follow-up scan of target 21 with tip 14, 80x80 um, 224x224 pixel, tip offset +64 microns
- Post-exposure coarse scan of target 21 with tip 14. 80x80 µm scan w/ 64x64 pixel @ tip offset -128 um
- Post-exposure coarse scan of target 21 with tip 14. 80x80 µm scan w/ 64x64 pixel @ tip offset +128 um
- Post-exposure scan of target 22 with tip 14. 80x80 µm scan w/ 224x224 pixel @ tip offset 0 um
- Post-exposure coarse scan of target 22 with tip 14. 80x80 µm scan w/ 64x64 pixel @ tip offset 64 um

STP078

Planning:

- Follow-up of target 10 with cantilever 10, tip offset 250 µm - tuning centre and zooming
- Follow-up of target 10 segment 159 with cantilever 10, large particle
- Target 10, segment 159, small particle zoom, follow-up to SCAN_MD_M019_S067_2015-08-01T113051Z_TGT10
- Follow-up of target 10 segment 161 with cantilever 10, tip offset 0
- Scan of target 10 segment 161 with tip 10, tip offset +64.0 µm
- Scan of target 10 segment 161 with tip 10, tip offset +128.0 µm
- Scan of target 10 segment 159 with tip 10, tip offset -64.0 µm
- Scan of target 10 segment 159 with tip 10, tip offset -128.0 µm
- Scan of target 10 segment 158 with tip 10, tip offset 0 µm

STP079

Planning:

- Follow-up scan of target 21 with tip 14, 80x80 um, 224x224 pixel, tip offset -128 microns
- Follow-up scan of target 21 with tip 14, 80x80 um, 224x224 pixel, tip offset 128 microns
- XY calibration of cantilever 14, hybrid mode, main scan Y
- Follow-up scan of target 22 with tip 14, 80x80 um, 224x224 pixel, tip offset 0 microns
- Follow-up scan of target 22 with tip 14, 80x80 um, 224x224 pixel, tip offset 64 microns
- Tip calibration of cantilever 8, hybrid contact mode, main scan Y
- Tip calibration of cantilever 14, hybrid mode, main scan Y
- Zoom of the centre of target 10, tip 5. 8x8 um, 256x256 pixel

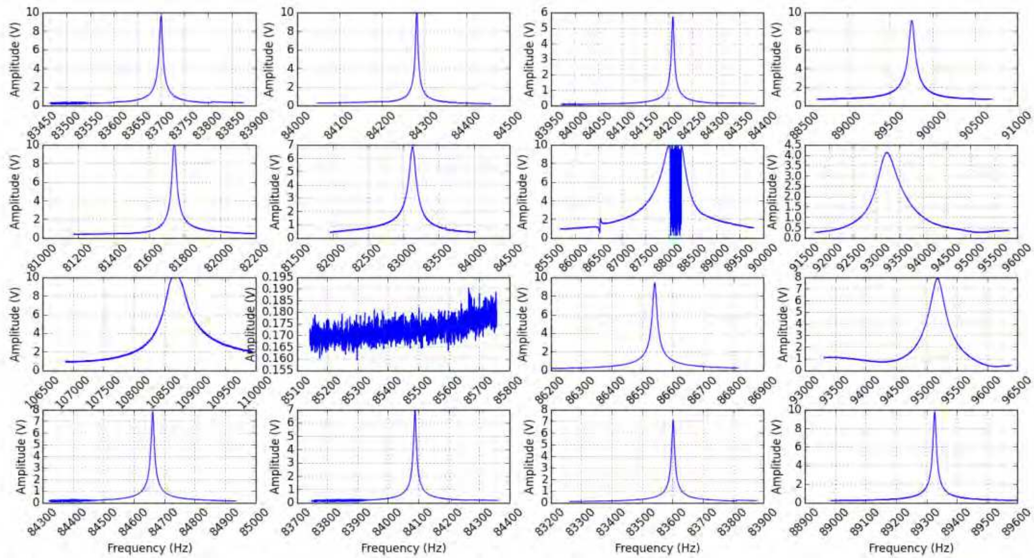
STP080

Planning:

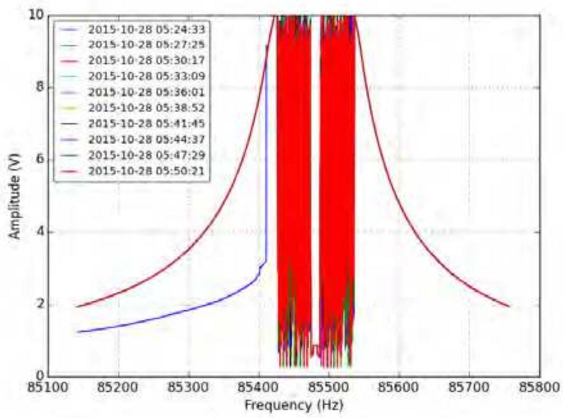
- Frequency survey of all cantilevers using default parameters
- 10 high excitation resonance sweeps to shake off material from tip 10
- Tip calibration of cantilever 10 after vibrating to clean
- Tile of 10x10 µm post-scans, 10% overlap, 384x384 of target 22. Tip offset +64 µm
- Tile of 10x10 µm post-scans, 10% overlap, 512x512 of target 21. Tip offset -64 µm

Additional Notes:

2015-10-28 04:40:00 : Frequency survey of all cantilevers using default parameters

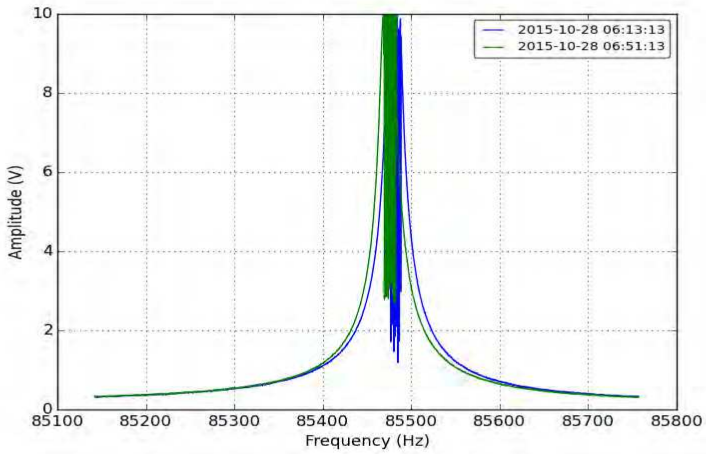


2015-10-28 05:25:52 : 10 high excitation resonance sweeps to shake off material from tip 10



2015-10-28 05:57:32 : Tip calibration of cantilever 10 after vibrating to clean

Frequency scans:



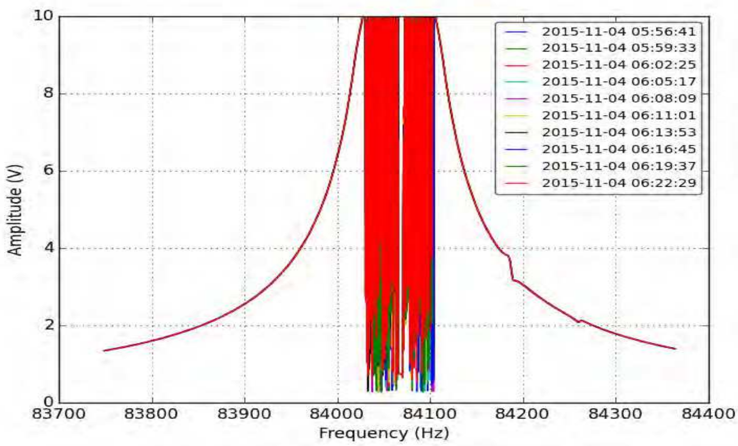
STP081

Planning:

- Shake tip 14 to try and clean off any contaminants
- Tip calibration of cantilever 14 after shaking, hybrid mode, main scan Y
- Tip calibration of cantilever 10 after vibrating to clean in STP080 - standard excitation
- Follow-up scan of target 21 with tip 15, 80x80 um, 224x224 pixel, tip offset -100 microns
- Set automatic retraction calculation with safety factor of 3
- Run feature vector with trend and median correction, 50% threshold and 200% zoom on feature with >5 points
- Follow-up to frequency vector using tip 15, 224x224 pixels. Auto retraction height ON
- Pre/post scan of facet 13 with cantilever 14
- Follow-up scan of target 22 with tip 14, 80x80 um, 224x224 pixel, tip offset 0 microns
- Follow-up scan of target 22 with tip 14, 80x80 um, 224x224 pixel, tip offset 64 microns
    - *Likely wrong target is scanned, wheel should have moved from segment 208 to 352. Reference point was found but then the wheel got stuck at segment 0.*

Additional Notes:

2015-11-04 05:58:00 : Shake tip 14 to try and clean off any contaminants



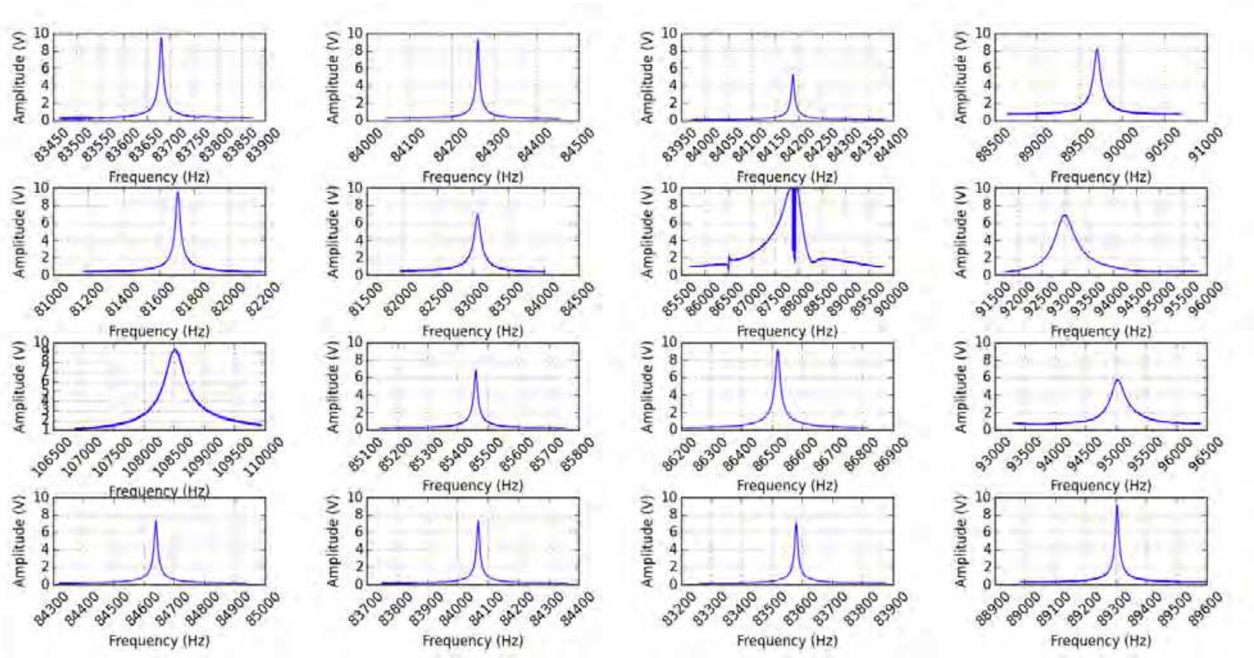
STP082

Planning:

- Frequency survey of all cantilevers using default parameters
- Follow-up scan of SCAN_MD_M022_S079_2015-10-22T115152Z_TGT21 with tip 15, 80x80 um, 128x128 pixel
- Feature vector (trend+median, count pixel >3, thresh 40%, 3x zoom, set 256x256 pixel)
- Set automatic retraction calculation with safety factor of 2
- Follow-up to frequency vector using tip 15, 256x256 pixels. Auto retraction height ON
- Tip calibration of cantilever 15, hybrid mode, main scan Y
- Coarse repeat scan of target 10, now with cantilever 9, before feature vector
- Feature vector (trend, 50% thresh, min pixel 50, 2x zoom, 256x256 follow-up)
- 256x256 follow-up to feature vector of target 10 with cantilever 9
- XY calibration with tip 14, 80x80 um, 256x256 pixel
- XY calibration with tip 14, 40x40 um, 192x192 pixel
- XY calibration with tip 14, 10x10 um, 128x128 pixel

Additional Notes:

2015-11-11 04:56:00 : Frequency survey of all cantilevers using default parameters



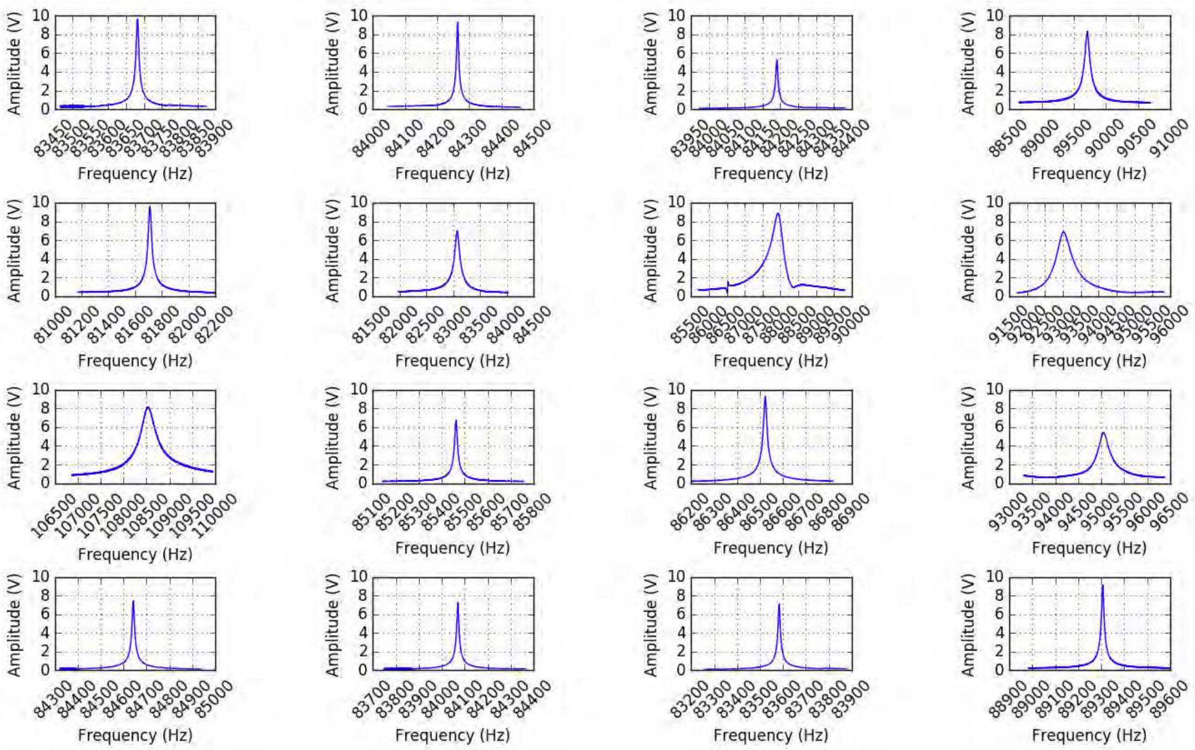
STP083

Planning:

- Frequency survey of all cantilevers using default parameters
- Edge finding line scans with cantilever 1, optimised parameters
- Edge finding line scans with cantilever 2, optimised parameters
- Edge finding line scans with cantilever 3, optimised parameters
- Edge finding line scans with cantilever 16, optimised parameters
- Repeat of scan previously showing two particles, target 14 tip 9. Now see one new?
- Target 10, segment 159, small particle zooms

Additional Notes:

2015-11-18 05:10:00 : Frequency survey of all cantilevers using default parameters



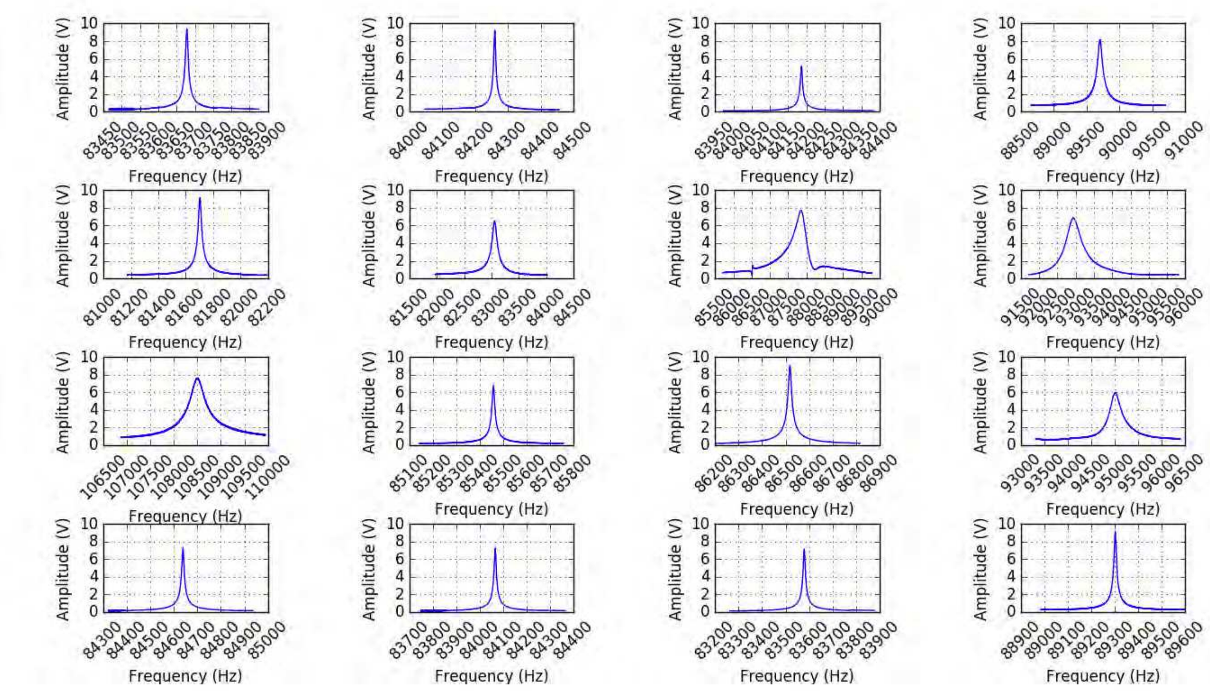
STP084

Planning:

- Frequency survey of all cantilevers using default parameters
- XY calibration with tip 14, 80x80 um, 256x256 pixel
- Tip calibration of cantilever 16, hybrid mode, main scan Y
- Tip calibration of cantilever 15, hybrid mode, main scan Y
- Tip calibration of cantilever 9
- Follow-up to SCAN_MD_M022_S082_2015-11-14T074809Z_TGT10, 3x scans
- Zoom of target 10 with cantilever 9
- Pre-scan of target 24 with tip 14
- Edge finding scan with tip 16, estimated linear position

Additional Notes:

2015-11-25 05:10:00 : Frequency survey of all cantilevers using default parameter



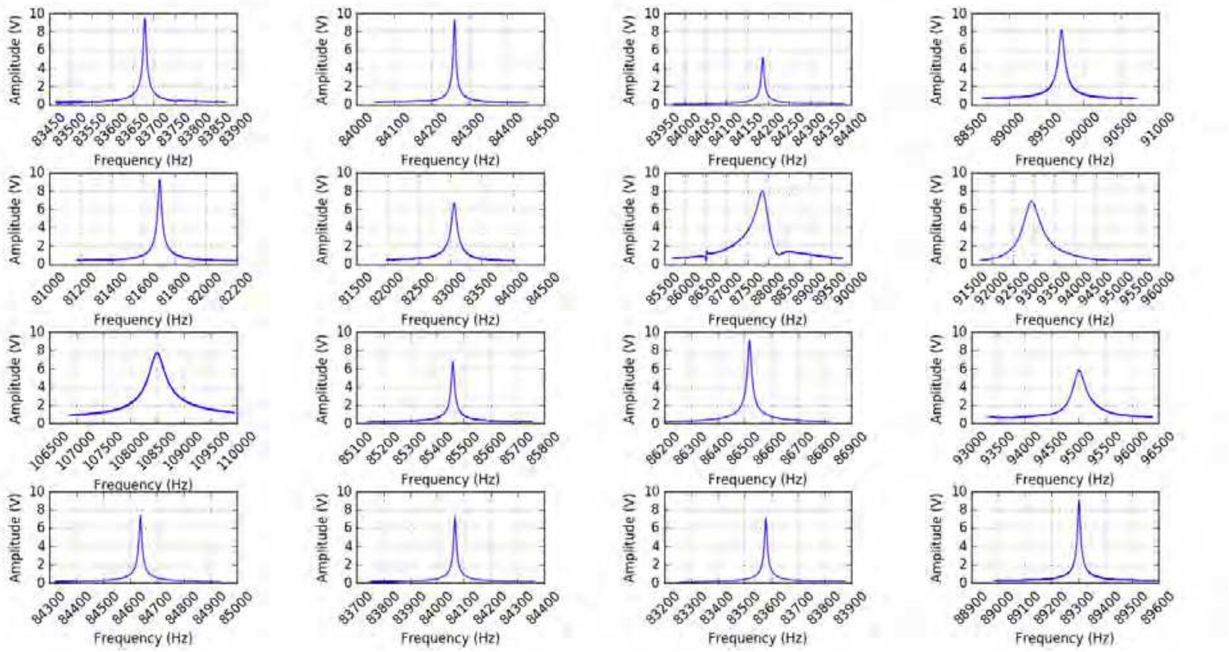
STP085

Planning:

- Frequency survey of all cantilevers using default parameters
- Cantilever 1 edge finding scan
- Cantilever 2 edge finding scan
- Cantilever 3 edge finding scan
- Tip calibration of cantilever 1, hybrid mode, main scan Y
- Pre-scan of target 24 with tip 14, tip offset +64 microns
- Pre-scan of target 24 with tip 14, tip offset -64 microns
- Expose facet 13 during close-Sun pointing
- Pre-scan of target 24 with tip 14, tip offset +128 microns
- Tip calibration of cantilever 15, hybrid mode, main scan Y

Additional Notes:

2015-12-02 05:10:00 : Frequency survey of all cantilevers using default parameters



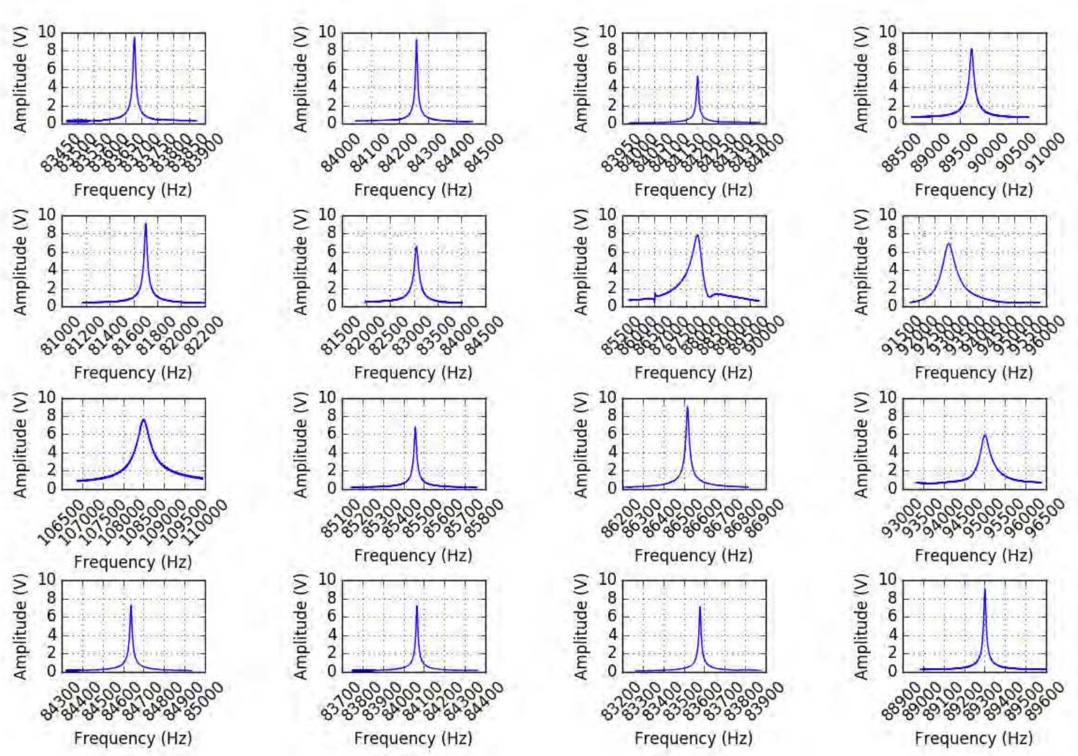
STP086

Planning:

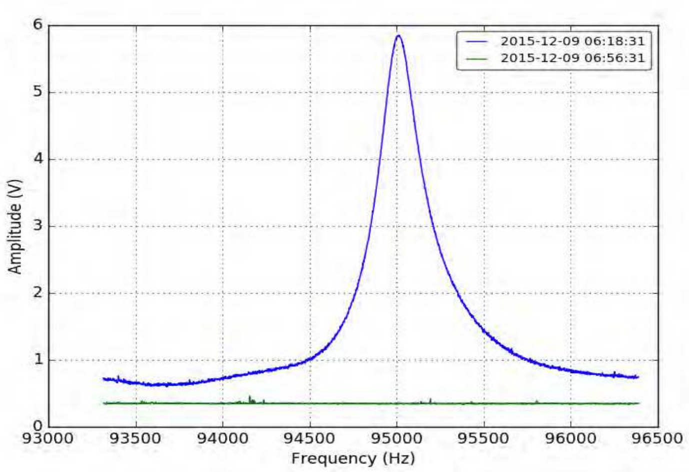
- Frequency survey of all cantilevers using default parameters
- Edge finding scan with tip 5, estimated linear position
- Edge finding scan with tip 8, and 12, estimated linear position, w/ control data
- Pre-scan of target 24 with tip 14, tip offset 0 microns, 40x40
- Coarse repeat scan of target 10, now with cantilever 9, with control data
- Follow-up to SCAN_MD_M022_S082_2015-11-14T074809Z_TGT10, 3x scans - repeat of STP084, higher retract

Additional Notes:

2015-12-09 05:10:00 : Frequency survey of all cantilevers using default parameters



2015-12-09 06:05:00: Tip calibration of cantilever 12



Tip 12 resonance has vanished.

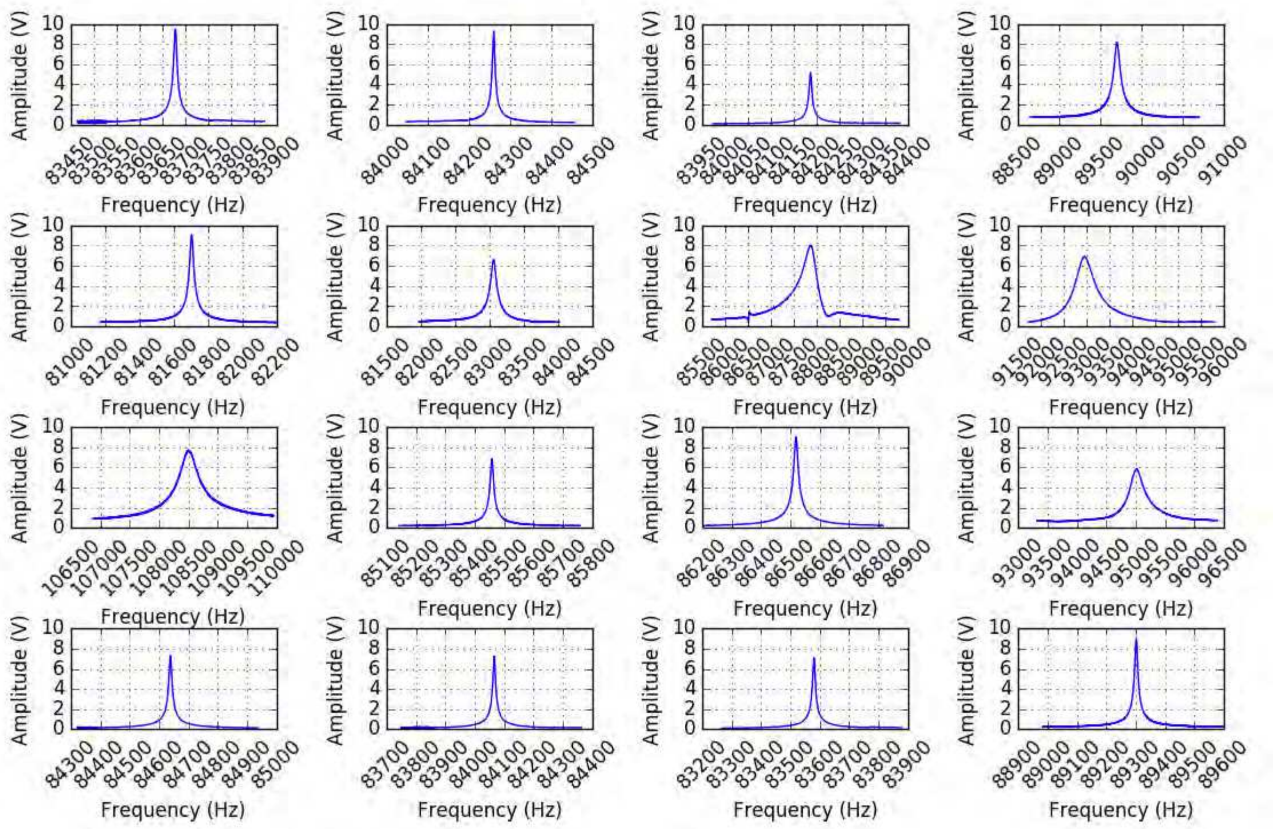
STP087

Planning:

- Frequency survey of all cantilevers using default parameters
- Tip calibration of cantilever 11, hybrid mode, main scan Y
- Tip calibration of cantilevers 2, 3, 4, hybrid mode, main scan Y
- Cantilever 6 edge finding scan
- High resolution tip calibration of cantilever 15, hybrid mode, main scan Y
- Coarse pre-scan of target 24 with tip 5
- Follow-up of target 10 segment 161 with cantilever 5, tip offset +64

Additional Notes:

2015-12-16 05:10:00 : Frequency survey of all cantilevers using default parameters



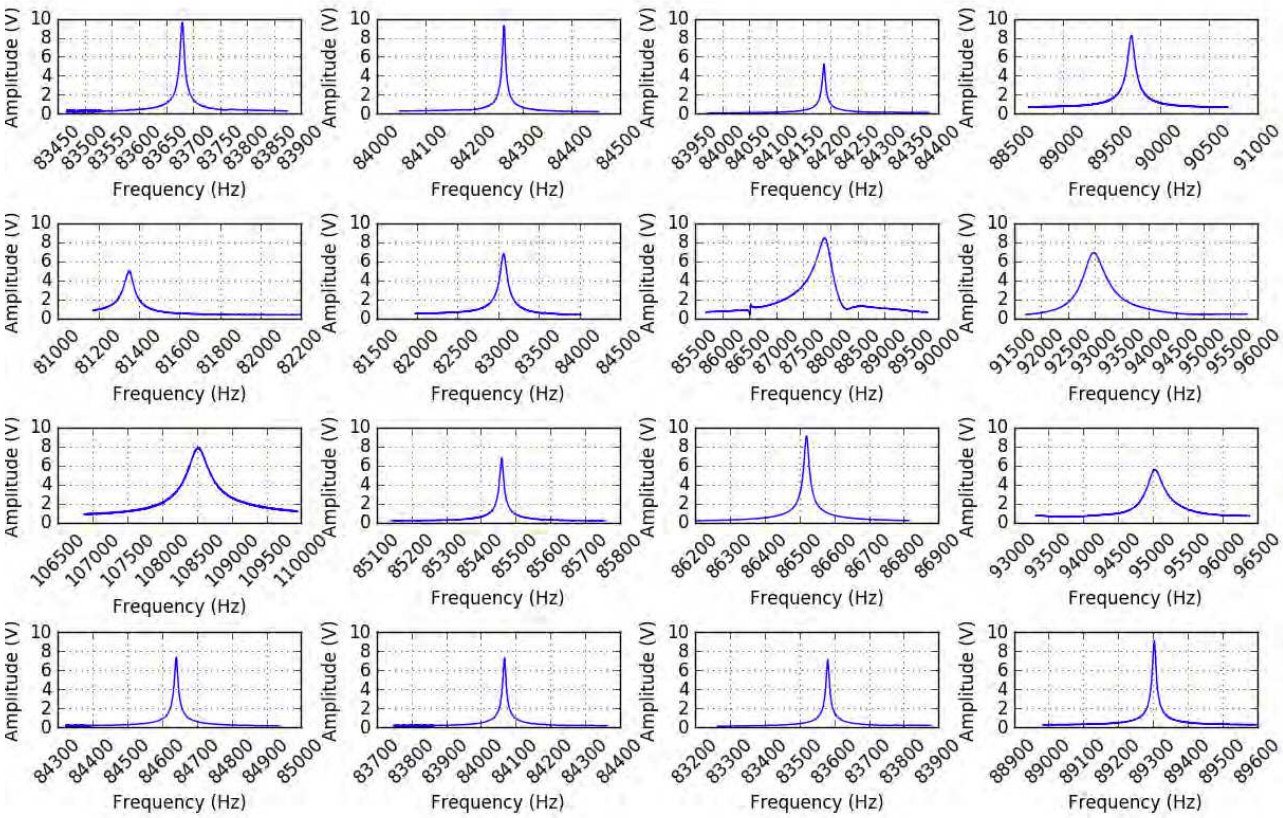
STP088

Planning:

- Frequency survey of all cantilevers using default parameters
- Coarse pre-scan of target 24 with tip 5, tip offset +64 um
- Coarse pre-scan of target 24 with tip 5, tip offset -64 um
- Coarse pre-scan of target 24 with tip 5, tip offset +128 um
- Phase survey of all cantilevers using default parameters
- Coarse pre-scan of target 24 with tip 5, tip offset -128 um
- Medium pre-scan of target 24 with tip 5, tip offset 0 um
- Medium pre-scan of target 24 with tip 5, tip offset 64 um
- Medium pre-scan of target 24 with tip 5, tip offset -64 um

Additional Notes:

2015-12-23 05:10:00 : Frequency survey of all cantilevers using default parameters



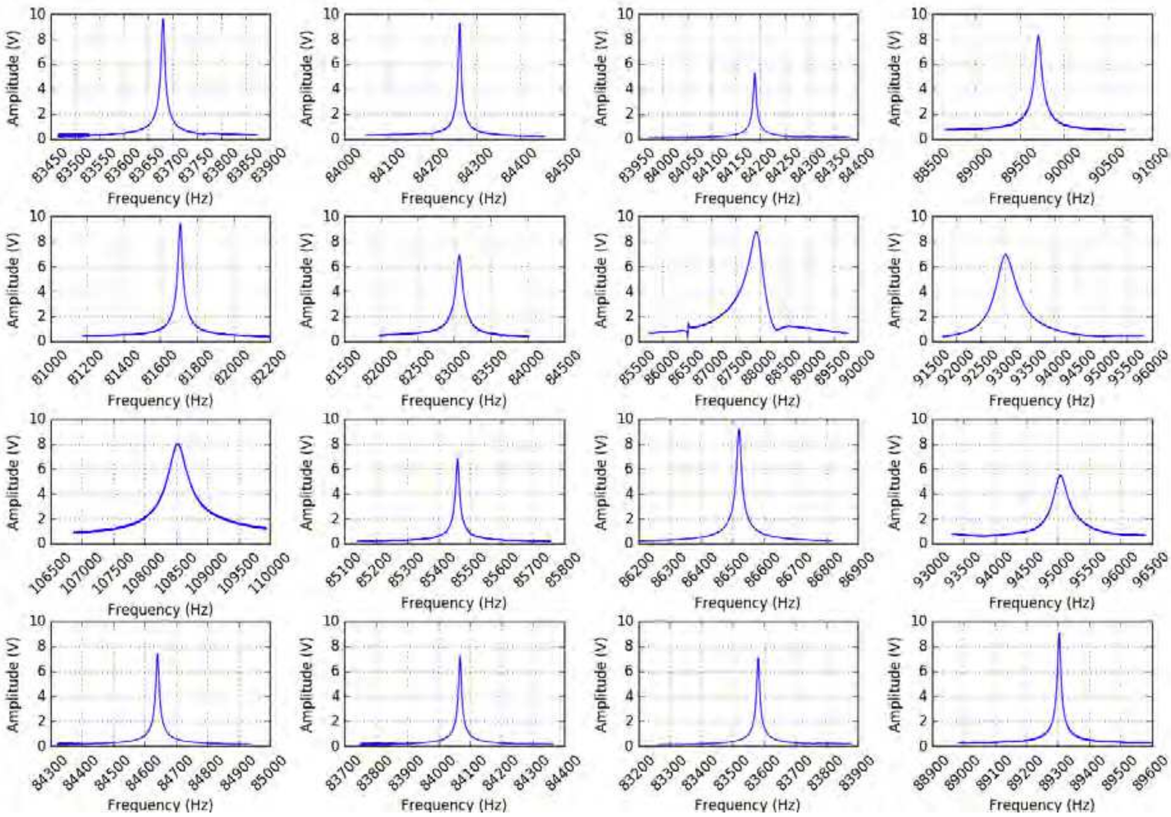
STP089

Planning:

- Frequency survey of all cantilevers using default parameters
- Contact mode scan of target 10 (segment 161) at -64 µm with control data
- Contact mode scan of target 10 (segment 161) at -128 µm with control data
- Contact mode scan of target 10 (segment 161) at +128 µm with control data
- Contact mode scan of target 10 (segment 159) at -64 µm with control data
- Contact mode scan of target 10 (segment 159) at -128 µm with control data
- Contact mode scan of target 10 (segment 159) at +128 µm with control data

Additional Notes:

2015-12-30 05:10:00 : Frequency survey of all cantilevers using default parameters



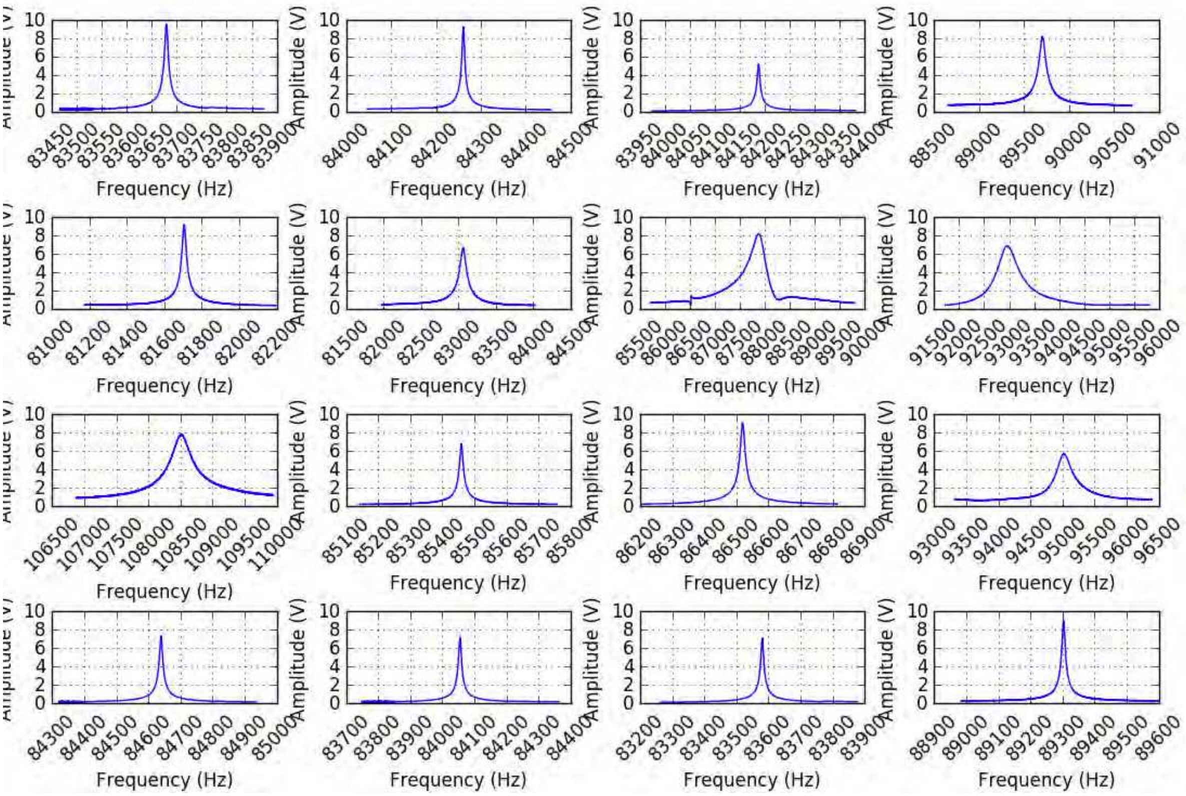
STP090

Planning:

- Frequency survey of all cantilevers using default parameters
- Coarse pre-scan of target 24 with tip 1, tip offset +64 um
- Coarse pre-scan of target 24 with tip 1, tip offset +128 um
- Coarse pre-scan of target 24 with tip 1, tip offset -128 um
- Medium pre-scan of target 24 with tip 1, tip offset 0 um
- Medium pre-scan of target 24 with tip 1, tip offset -64 um

Additional Notes:

2016-01-06 05:10:00 : Frequency survey of all cantilevers using default parameters

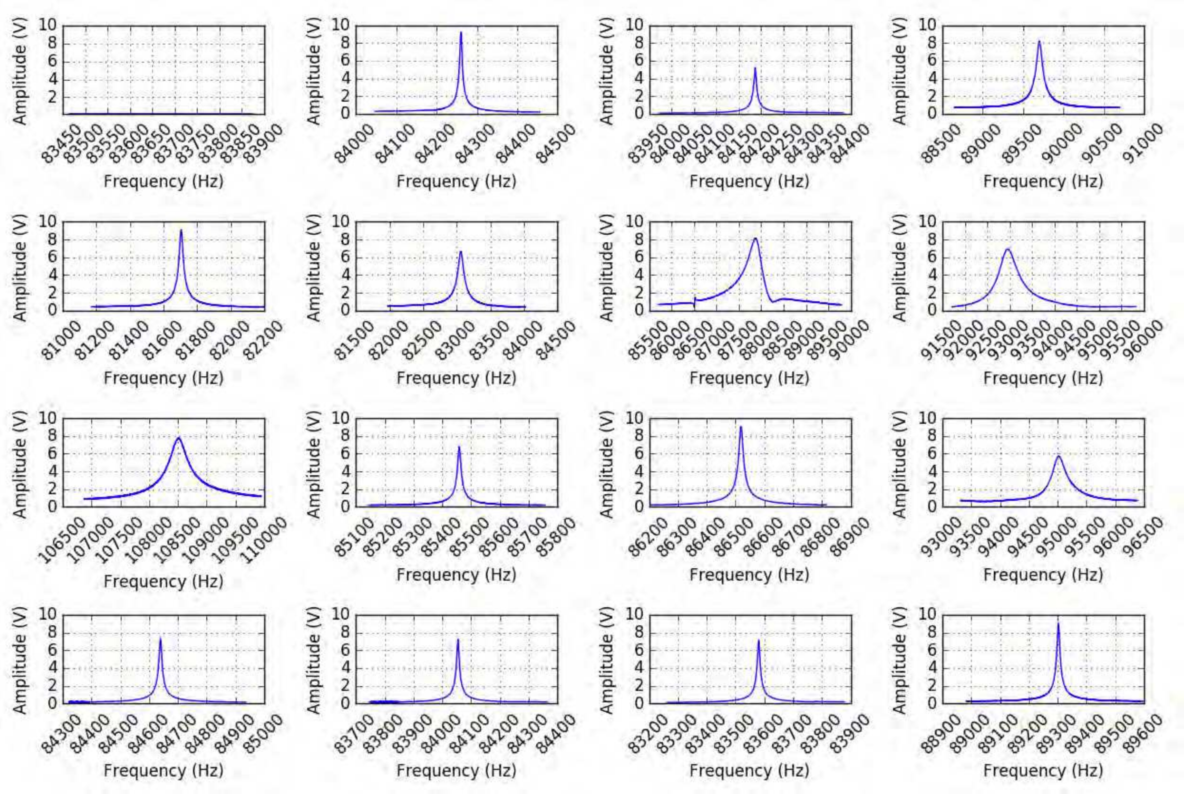


STP091

Planning:

Additional Notes:

2016-01-13 05:10:00 : Frequency survey of all cantilevers using default parameters



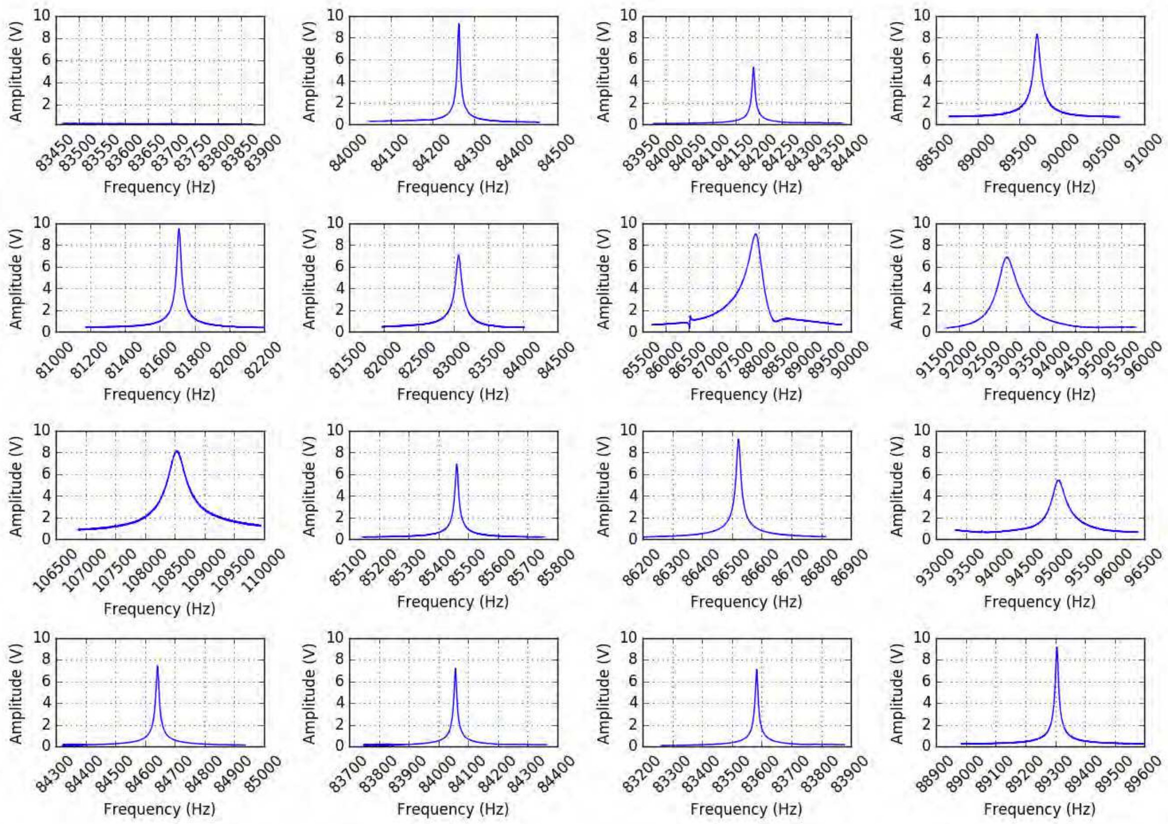
Cantilever 1 still appears to be "gone" - but other cantilevers on the block are fine, so it's not the excitation piezo or anything more global. It could be an electrical problem with the connection, or something that has dramatically changes the resonance frequency.

STP092

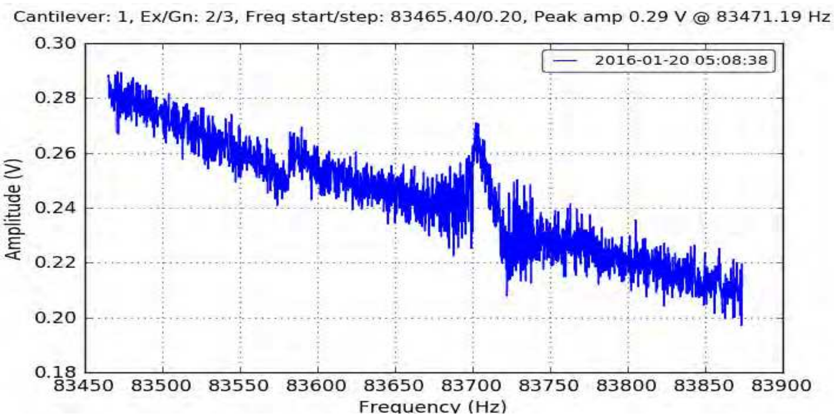
Planning:

Additional Notes:

2016-01-20 05:10:00 : Frequency survey of all cantilevers using default parameters

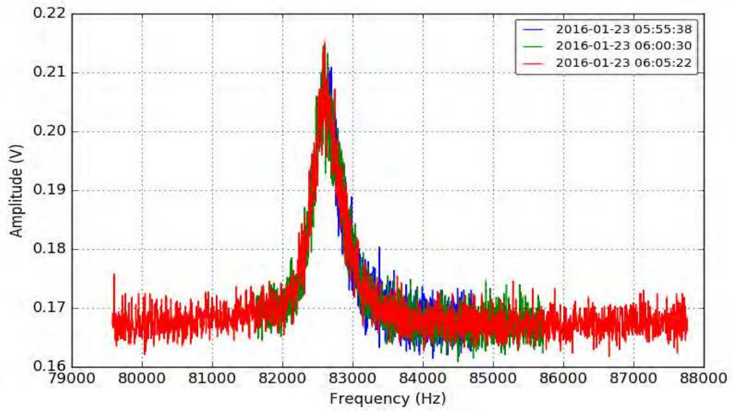


Cantilever 1 resonance still gone, but there's *something* there:

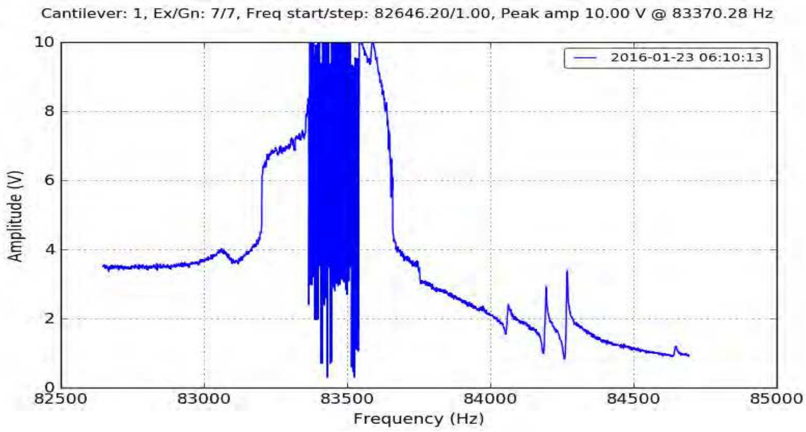


2016-01-23 05:55:00 : Resonance tests of tip 1

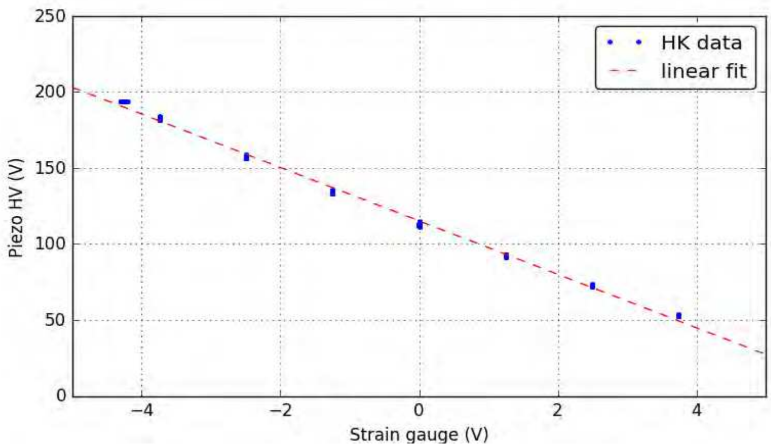
Expanded frequency range:



Standard resonance at 83670.2 Hz. Turning up the excitation level to full:



2016-01-23 06:14:28 : Z piezo / strain gauge tests



2016-01-24 06:24:28 : Set point tests (10.0-20.0% in steps of 0.1%)

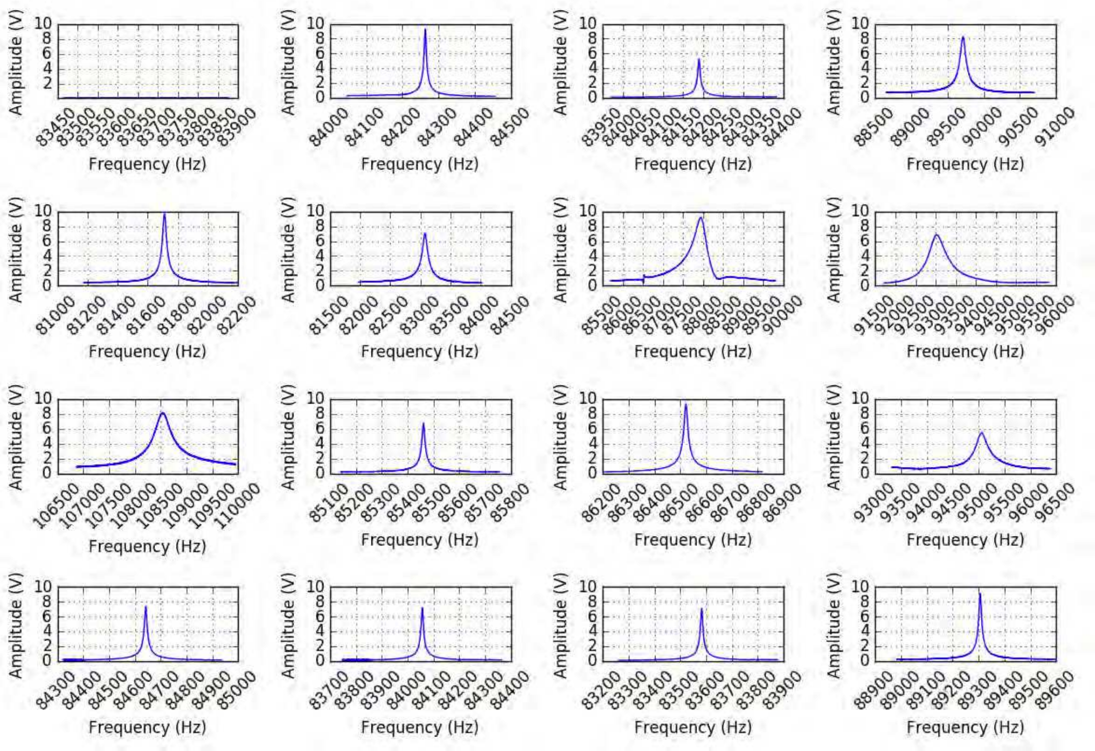
Set HK rate to 2 seconds again, then set the setpoint to 10 - 20% in steps of 0.1%.

STP093

Planning:

Additional Notes:

2016-01-27 05:10:00 : Frequency survey of all cantilevers using default parameters



STP093-5. RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/IMG_1601223_1604100_041_ZS

The top left part is very clean, (most likely) due to contact mode scan RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/IMG_1601223_1604100_032_ZS. Conclusion - contact mode may clean target of particles.

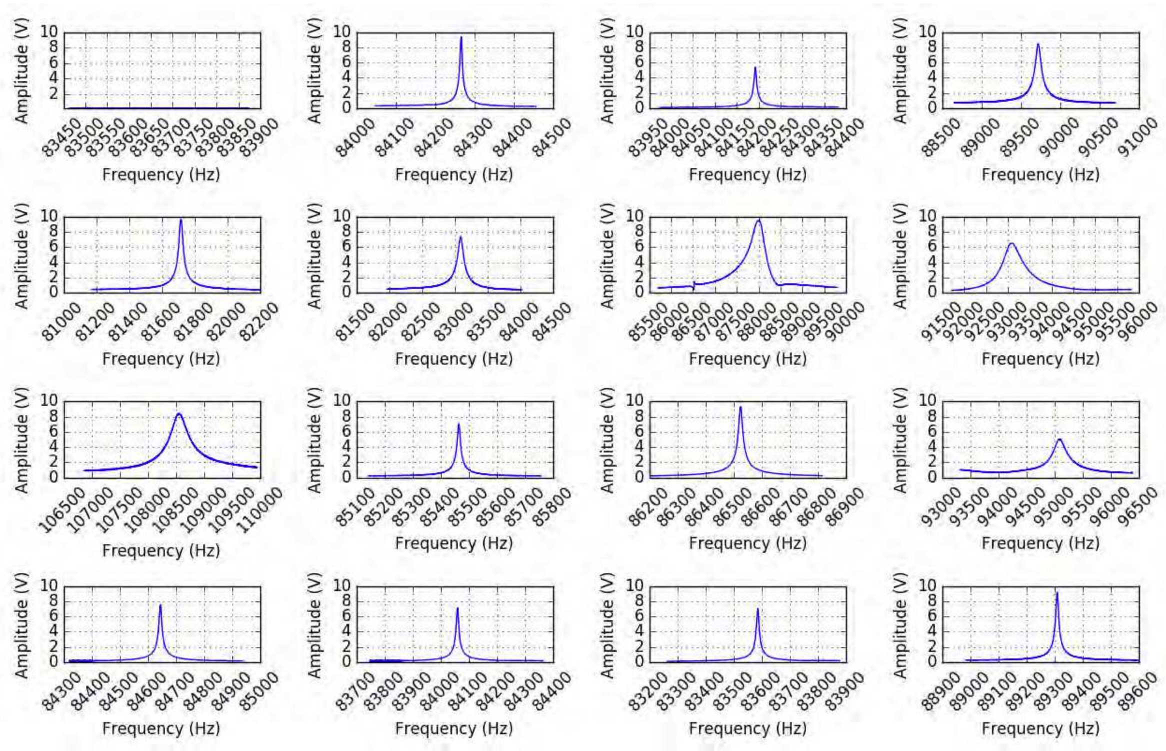
STP094

Planning:

- Target 13 coarse pre-scanned with tip 11 -100 to + 100 µm plus one 15x15µm scan at centre
    - *Course scan completed at STP94-3, repeated in STP97-2 following new exposures of target 13*
- Target 24 has some good scans with tip 5 (but not all are good)
    - try and "fill in the gaps" with another tip
    - *Completed in STP094-5,6 with tip 2*
- Tip 1 testing - broad frequency scan with all excitation levels
    - *Completed in this STP*
- XY calibration scans
    - *Completed in STP094-1,2*
- Scan of centre of target 13, follow-up to exposure in STP092
    - *Completed as above in STP094-3*
- Further tip 1 resonance tests
    - *Completed in this STP*

Additional Notes:

2016-02-03 05:10:00 : Frequency survey of all cantilevers using default parameters:



STP095

Planning:

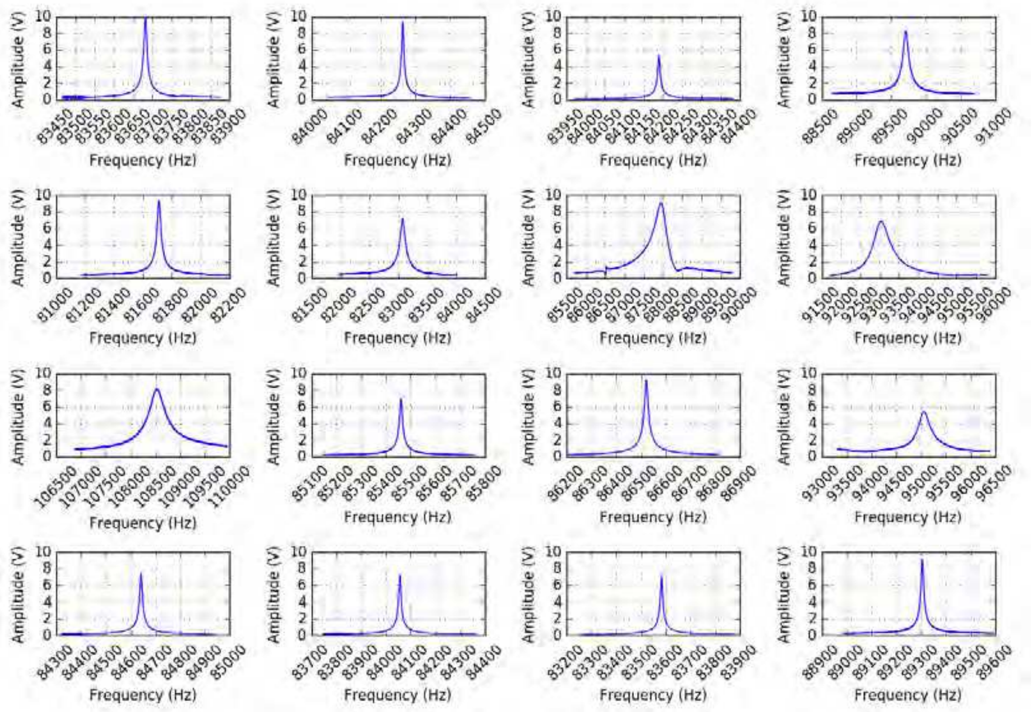
Planning priorities for the coming months:

highest resolution images of existing dust
mapping of spatial distribution of dust on exposed targets
magnetic mode
collect more dust

- OBSW upgrade
  - upgrade scheduled for 10th Feb (just after the start of STP095)
  - *Completed successfully this STP*
- Tip image of tip 11 at higher resolution (to see cometary dust on the tip)
  - *Completed: Scan 1.*
- Line scans with control data on and various Z steps and set points to see what the limits are the set point (and therefore the force that we can apply)
  - Contact mode (line) scan with ctrl_data on a solgel and silicon facet with the same cantilever (e.g. 14) with different z steps (4,8 on Si and 4,8,12,16,24, maybe more on solgel) and different setpoints (tbd).
  - *Completed*
- Repeat STP093-6 right hand side divided into two scans, as high resolution as time allows check z centre position to get good scans
  - Scan with larger approach range to get particle in bottom left, approach further down in Y and to -ve linear stage to try and catch the larger particle
  - *Completed*
- Repeat of target 10 scans in STP093
  - *Completed*
- Prescans on a Si facet - facet 6 is a little 'prepared' and it was used for one small exposure
  - *Completed*

Additional Notes:

2016-02-10 05:10:00 : Frequency survey of all cantilevers using default parameters:



The resonance of cantilever 1 has returned to ~nominal

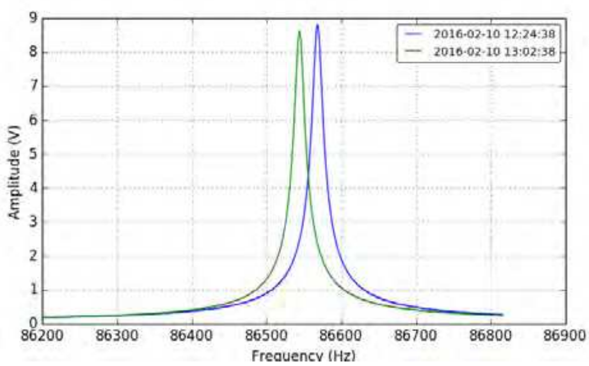
OBSW upgrade:

2016-02-10 07:00:00 : Start of OBSW upgrade slot (5 hours)

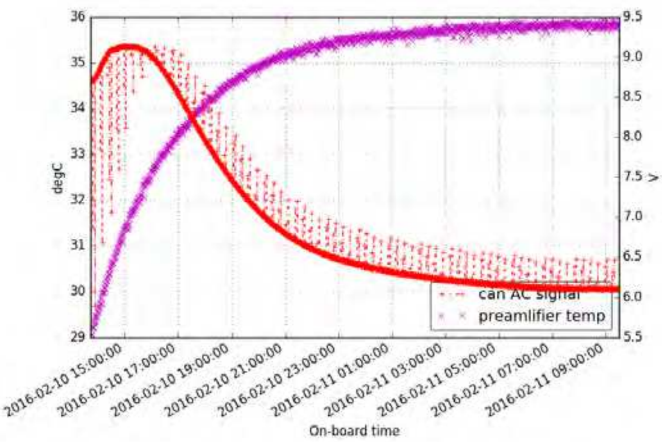
2016-02-10 12:00:00 : End of OBSW upgrade slot (5 hours)

STP095-1. RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/IMG_1604023_1606900_003_ZS

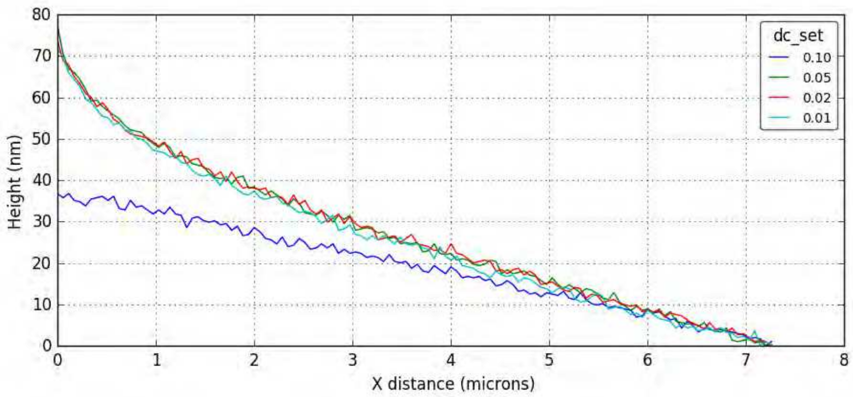
No (good) data - presumably due to drift after reboot in OBSW upgrade. Frequency scans look good, but show a large frequency shift:



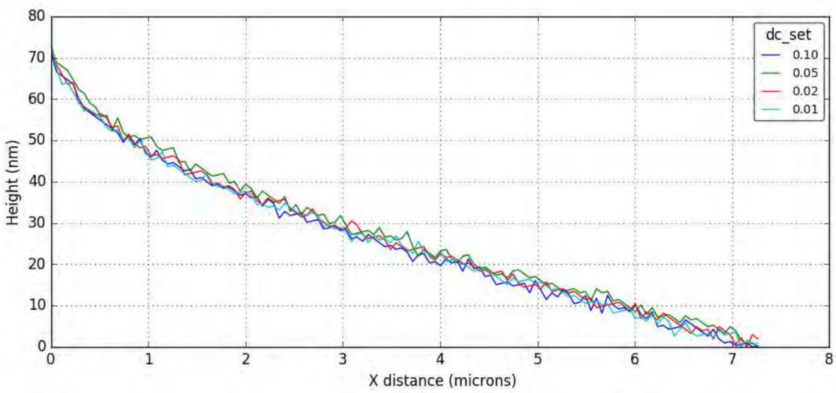
Looking at the cantilever AC and temperature confirms:



2016-02-11 23:31:00 : Line scans in CON mode with tip 14, facet 6, various setpoints and Z steps



Control data for all cases look OK, although it's getting marginal for 0.01 V.
)



Similar results as above.

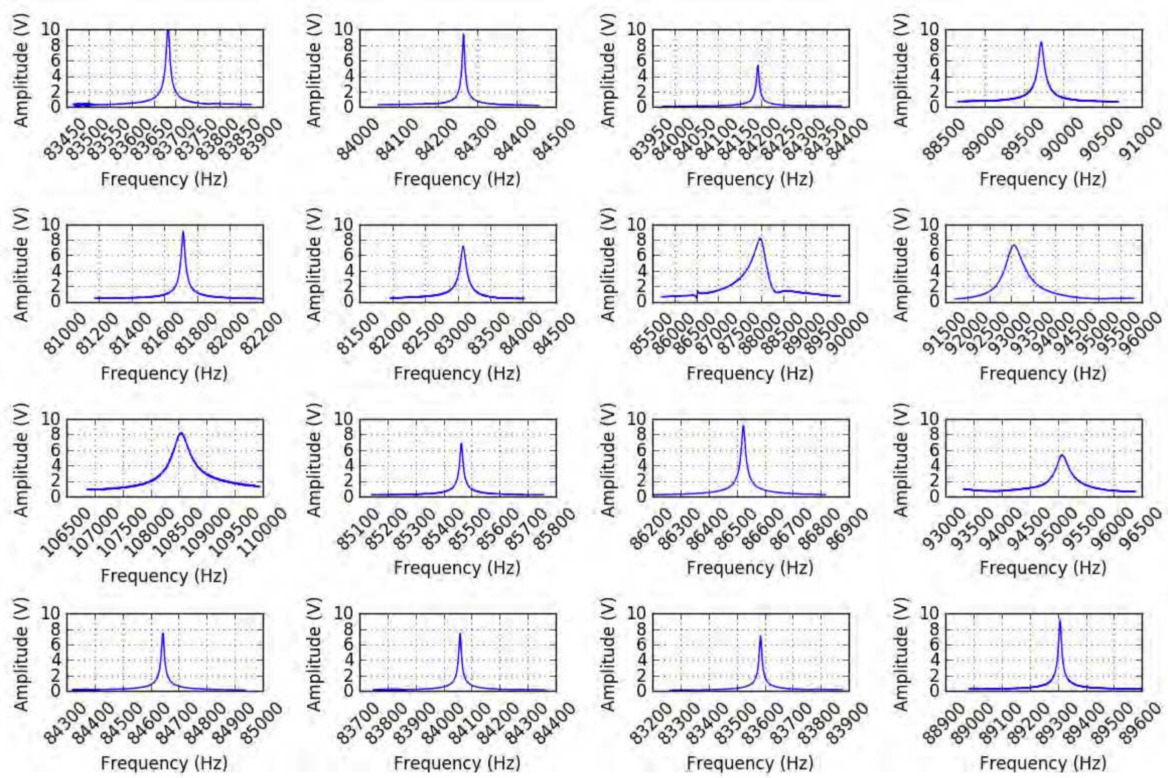
STP096

Planning:

- Tip image of tip 1 (now that resonance looks nominal again)
    - *Completed STP096-1*
- Additional target 6 scans
    - *Completed STP096-4&5*
- Frequency vector to zoom on one or more of STP093-10 particles
    - *Completed*

Additional Notes:

2016-02-17 05:10:00 : Frequency survey of all cantilevers using default parameters



STP096-3. RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/IMG_1604023_1606900_030_ZS:

Follow-up to frequency vector using tip 11, 256x256 pixels. Auto retraction height ON

Since the feature vector failed to find a feature, the image scan is more-or-less a repeat of the previous scan.

Retraction height here was 1881.9 nm - in the original scan it was 2580 nm. This shows that the onboard calculation of the retraction height worked fine - the safety factor was 2.75 in the commanded scan, and 2.0 in the follow-up.

STP097

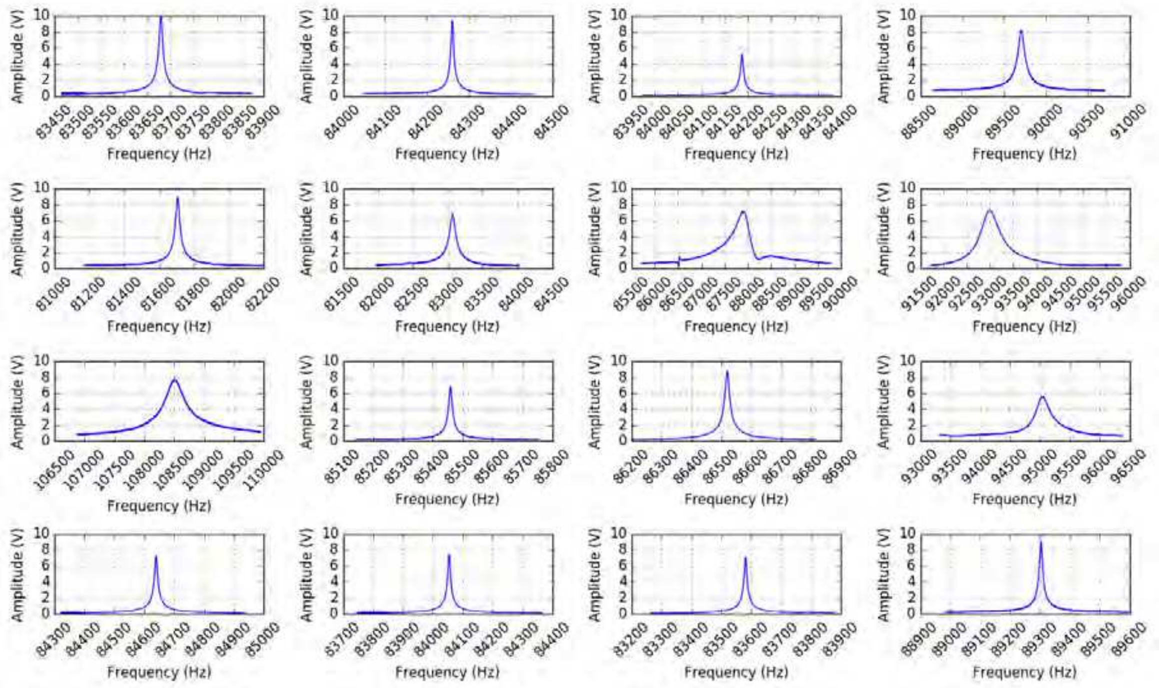
Planning:

Exposures planned for OCM in the middle and end of STP were aborted to avoid re-exposing target 13 that caught "fresh" dust by disabling MIDAS SID for shutter close/open periods.

- Repeat odd scan STP095-2 starting from lower left
  - smaller range as well to avoid artefact
  - *Completed in STP097-3*
- Repeat of target 10 (STP95-4)
  - increase retraction height to better image particles
  - *Completed in STP097-5*
- High resolution tip 9 tip image
  - after the target 10 re-scan
  - *Completed in STP97-6*

Additional Notes:

2016-02-24 05:10:00: Frequency survey of all cantilevers using default parameters



STP098

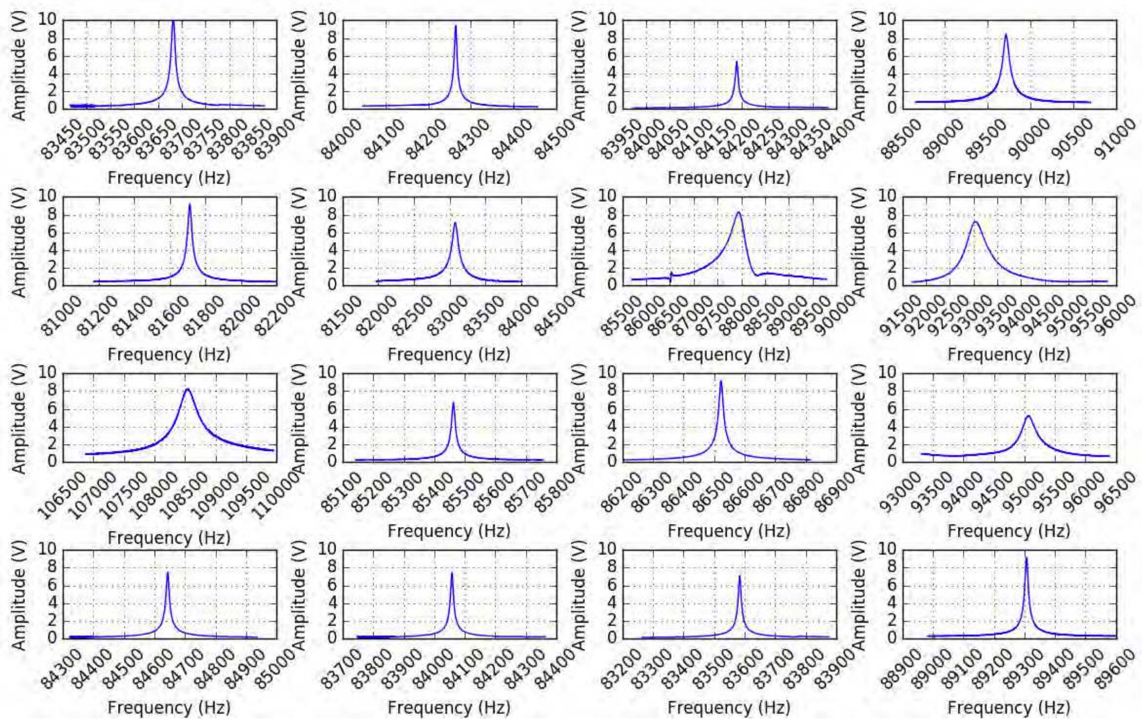
Planning:

Exposures now planned with target 11 rather than 13 (as many particles collected on target 13 awaiting high resolution scanning).

- Repeat of frequency vector scan from STP096
    - *Completed*
- Further prescan of facet 6 all with tip 7
    - *Completed*
- Contact mode scan with control data with tip 9
    - *Completed*

Additional Notes:

2016-03-02 05:10:00: Frequency survey of all cantilevers using default parameters



STP098-1. RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/IMG_1604023_1606900_068_ZS

Original image: STP93-10

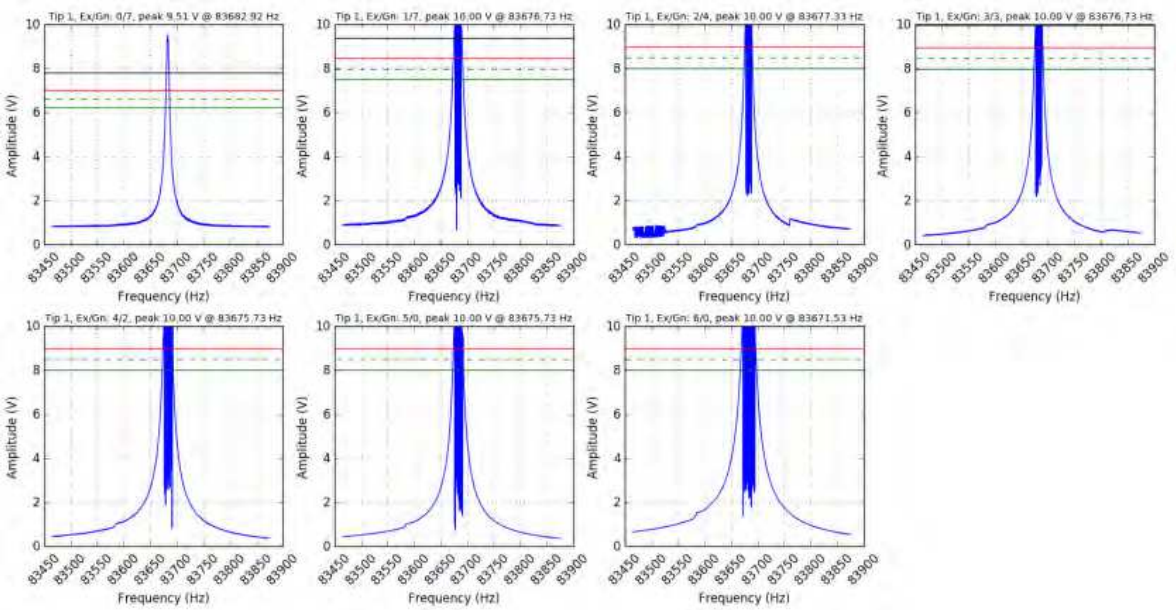
Pre-frequency vector: STP96-2

Bad frequency vector (repeat): STP96-3

Saturation is reached, as per the previous case. Note that this is almost certainly because hitting a particle on approach. If repeated this again, should approach at the bottom left (X=H_L) to start on the substrate and avoid this.

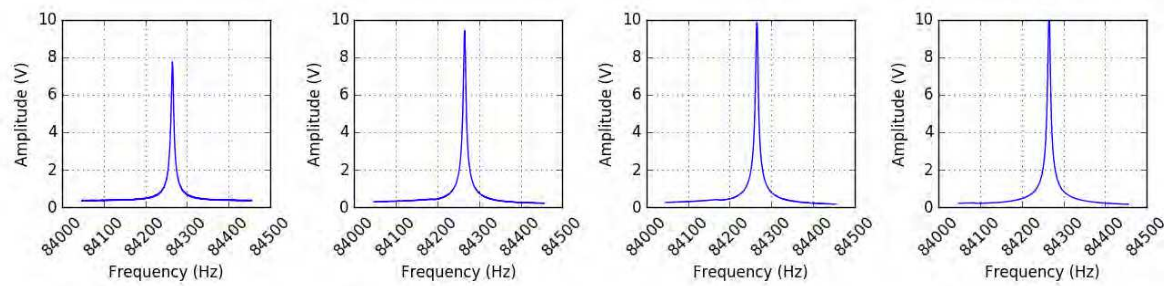
2016-03-05 05:55:00 : Resonance curve checks for magnetic cantilevers prior to amplitude calibration

Tip 1



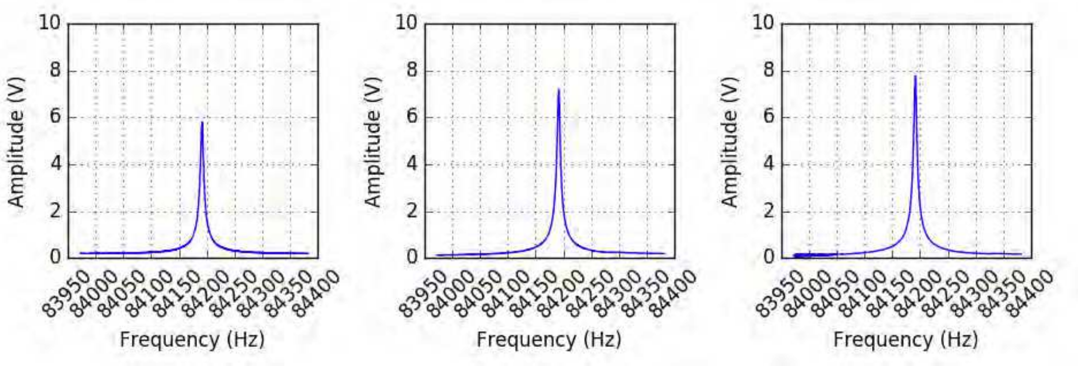
So good values to use for amplitude calibration line scans:

Tip 2



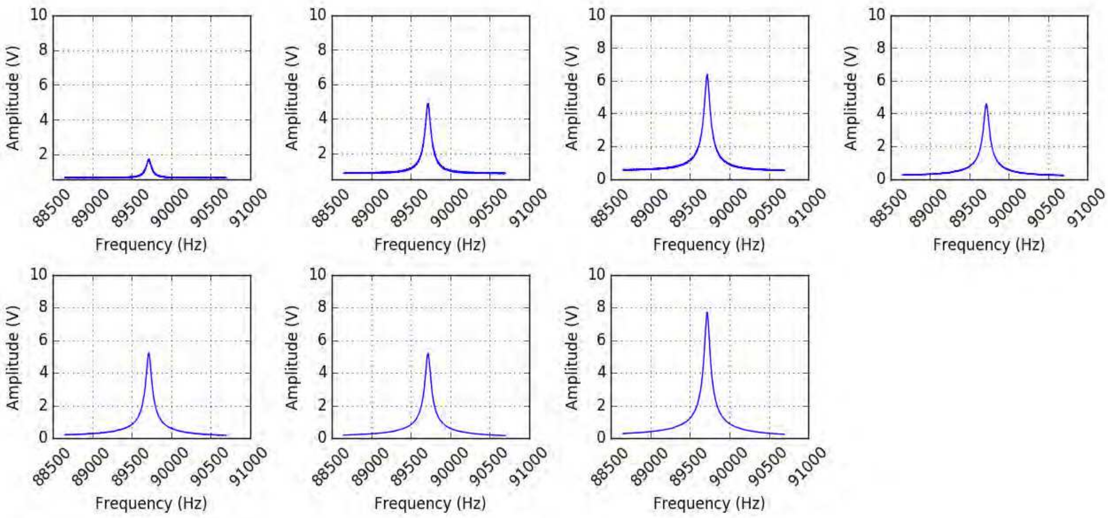
All values look OK, although exc 2 and 3 could be dialled down by one notch in AC gain to ensure don't saturate.

Tip 3



All values are fine, but can probably increase the first to gain=4.

Tip 4



These values seem considerably reduced compared with the (long ago) frequency survey.

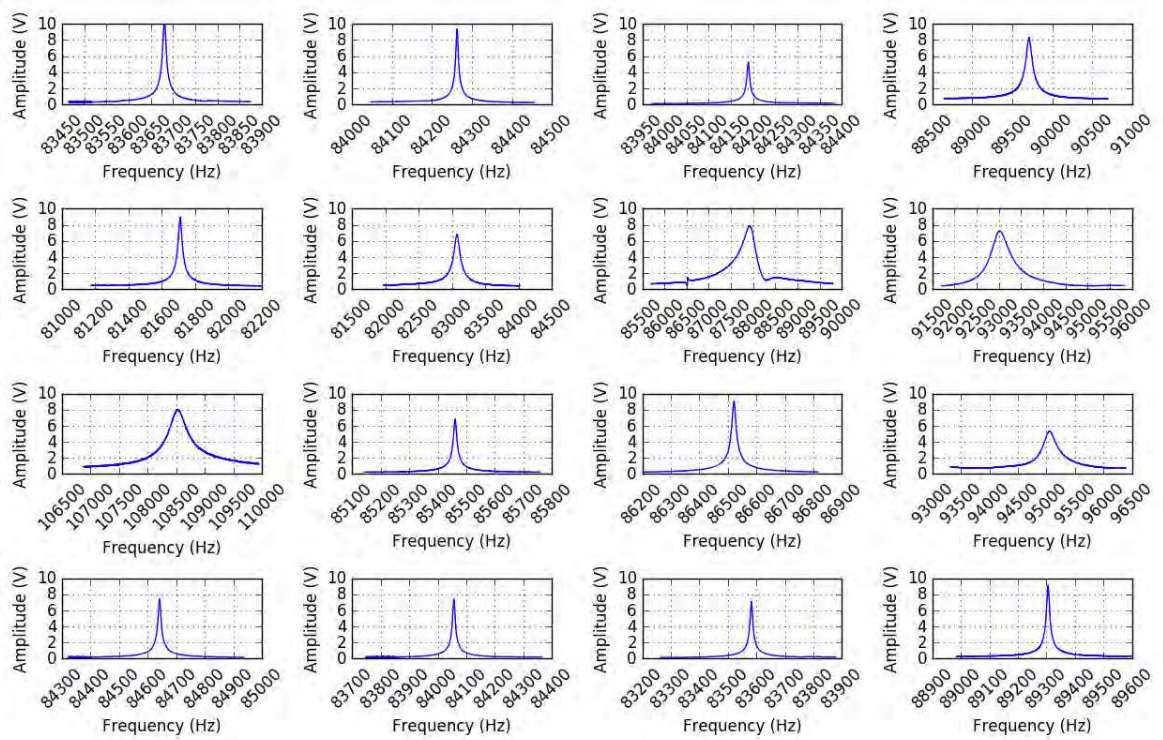
STP099

Planning:

- Scans of target 13
    - targeted and/or frequency vector scans following STP097 results
    - look at frequency vector - can we run on a previous scan and use for multiple follow-ups with minimal template changes
    - further coarse scans to identify more particles
    - *Completed*
- More preparation for magnetic mode scans
    - frequency sweeps with phase for magnetic cantilevers
    - line scans for height calibration
    - *Completed*
- Repeat STP097-5
    - approaching at "bottom right" and avoiding the large feature on the left
    - *Completed*

Additional Notes:

2016-03-09 05:10:00: Frequency survey of all cantilevers using default parameters

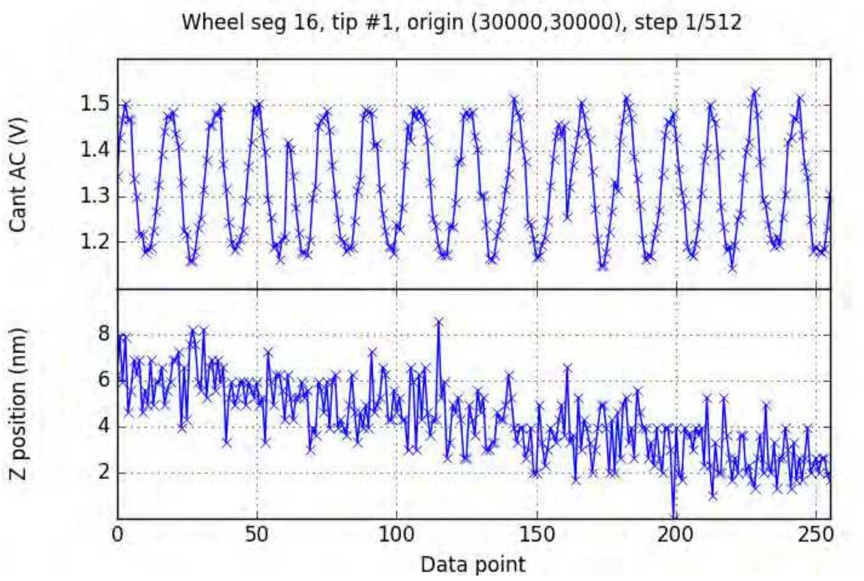


2016-03-11 19:28:52 : Amplitude calibrate line scans (with control data) of magnetic cantilevers - tip 1

5x 32 sets of control data received for tip 1 and 5 lines.

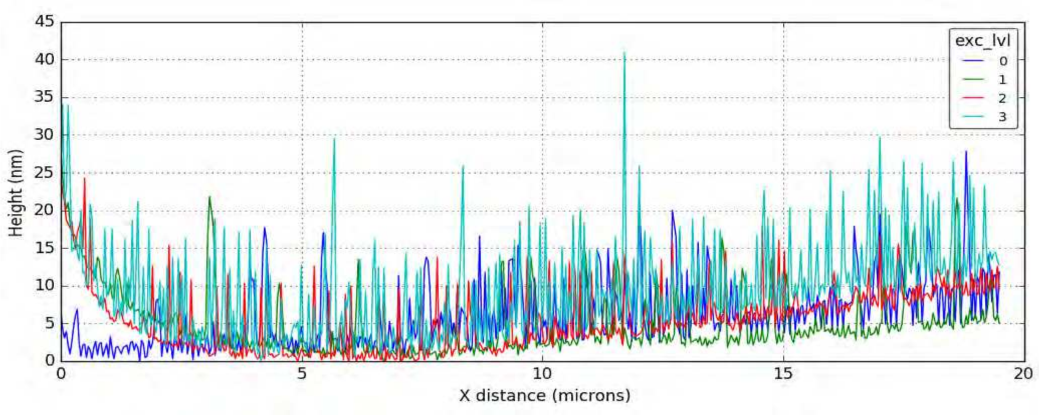
None of the tip 1 cases give good amplitude curves. Checking the frequency scans, some saturated (they were close before), and hence we have the oscillating 10V/0V behaviour and lots of hunting of the Z piezo.

Conclusion: we are rather hammering with these settings - WP=100%, SP=7%, this probably gives good images (see STP098), but doesn't help the tip.

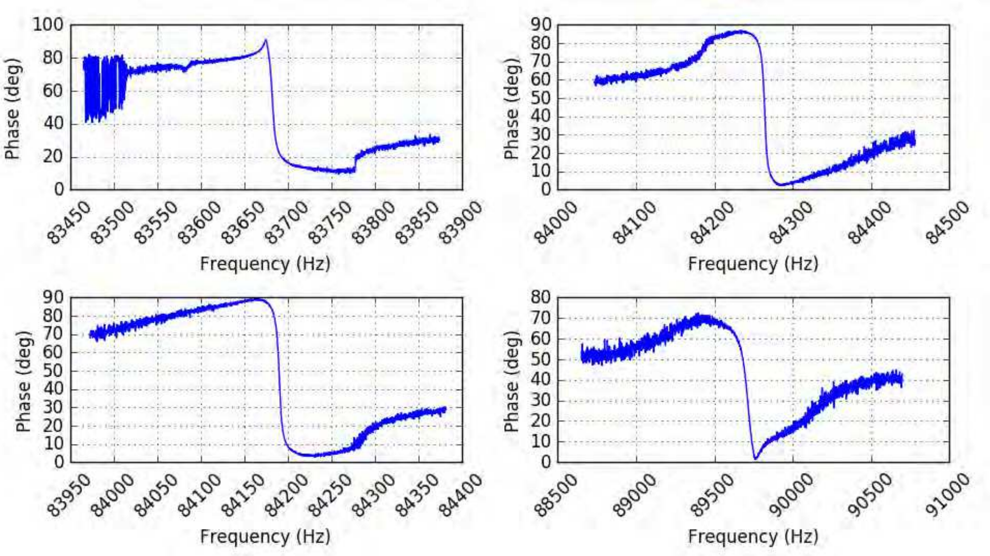


2016-03-11 21:24:52 : Amplitude calibrate line scans (with control data) of magnetic cantilevers - tip 2

Line scans at all excitation levels:

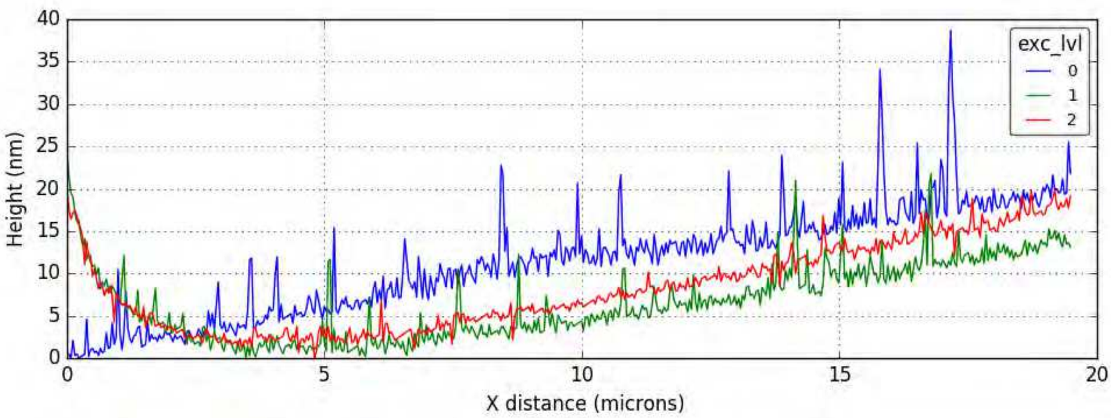


2016-03-12 05:40:00 : Frequency scans of magnetic cantilevers with phase output



See odd mirroring of the curve, and as before it doesn't always mirror exactly at zero.

2016-03-12 05:55:28 : Amplitude calibrate line scans (w/ctrl data) of magnetic cantilevers - tip 3



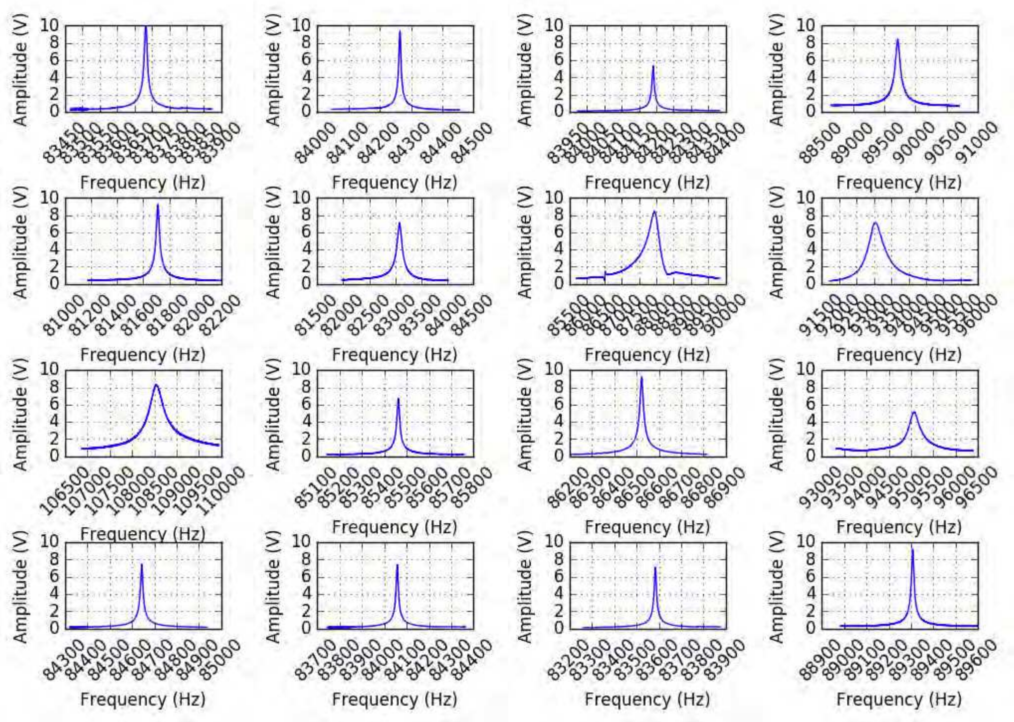
STP100

Planning:

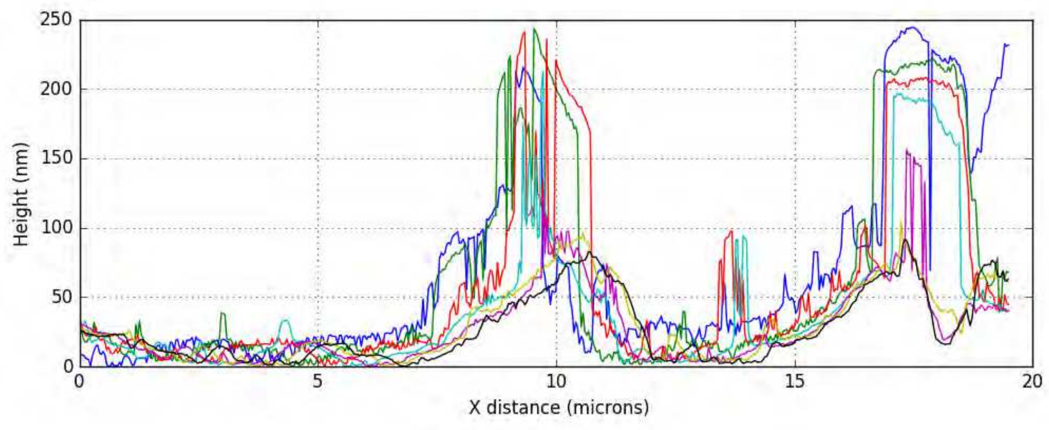
- Scans of target 13
  - targeted and/or frequency vector scans following STP097 results
  - *Completed.*
- More preparation for magnetic mode scans
  - line scans for height calibration with tip 4 (1-3 scheduled in STP099)
  - *Completed this STP.*
- Post scan of target 11 (low priority)
  - *Completed in STP103-1, STP114-9, STP117-1*

Additional Notes:

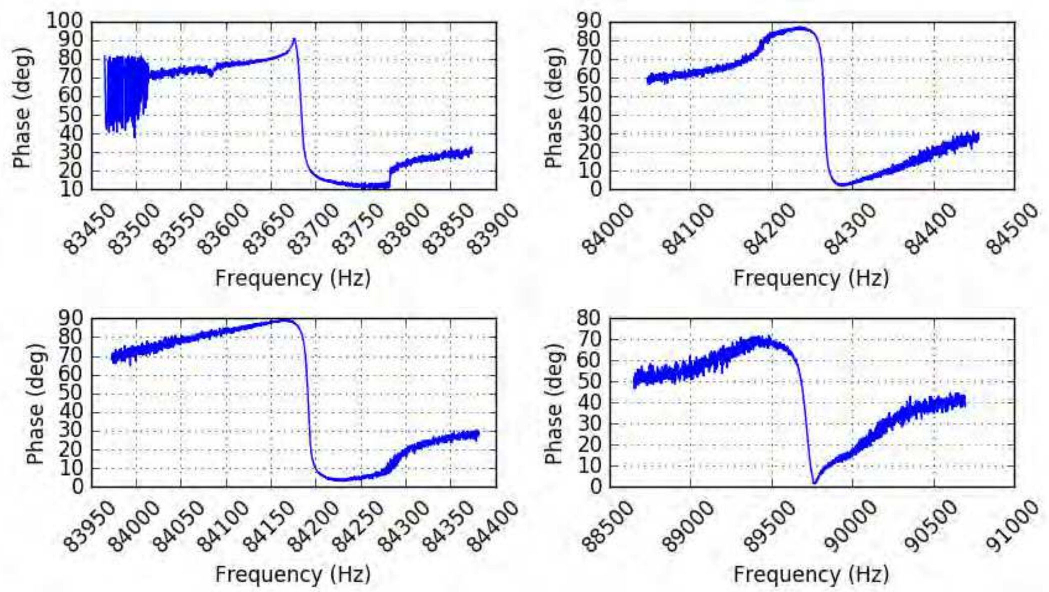
2016-03-16 05:10:00 : Frequency survey of all cantilevers using default parameters



2016-03-16 05:58:52 : Amplitude calibrate line scans (w/ctrl data) of magnetic cantilevers - tip 4



2016-03-16 08:41:52 : Frequency scans of magnetic cantilevers with phase (repeat of STP099 to look for shifts)



Seems very repeatable (compared to STP099).

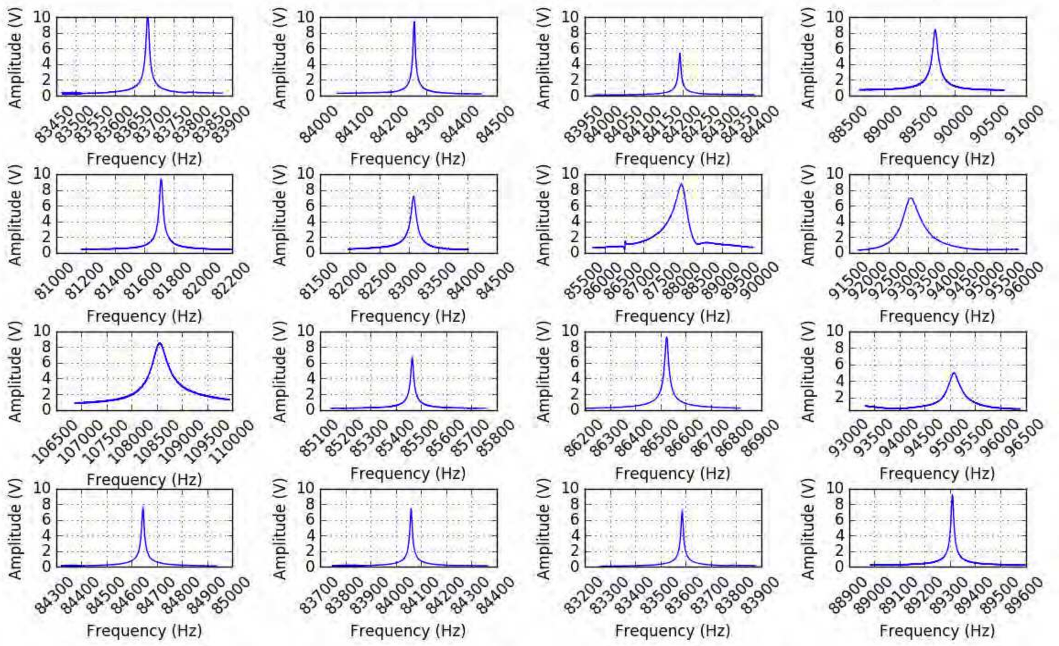
STP101

Planning:

- Further magnetic line scans
- Test frequency scan

Additional Notes:

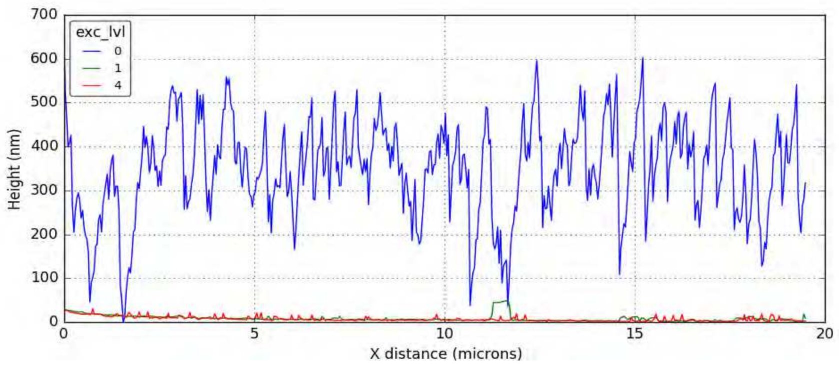
2016-03-23 05:10:00 : Frequency survey of all cantilevers using default parameters



STP101-1. RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/IMG_1606823_1609700_035_ZS

No data - frequency adjust parameters were mis-matched in all scans in this STP. Topography data can be recovered from line scans.

2016-03-25 10:16:52 : Amplitude calibrate line scans (w/ctrl data) of magnetic cantilevers - tip 1



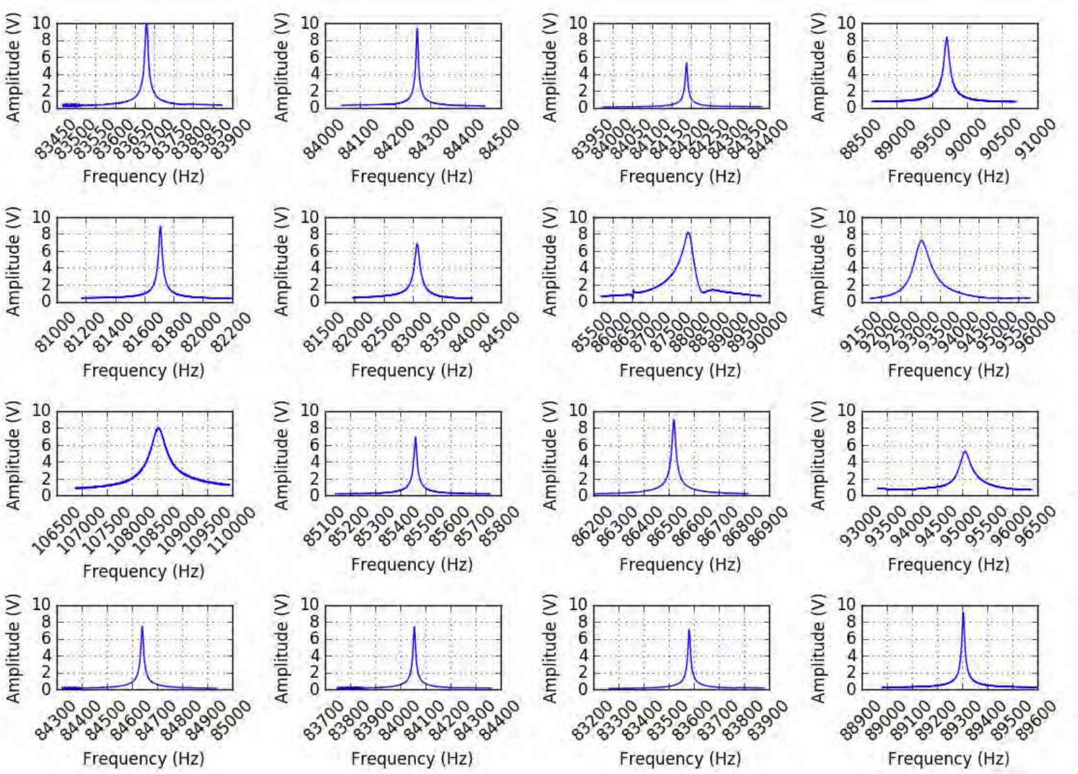
STP102

Planning:

- Next set of percentage tests
  - *Completed*
- Continued exposure of target 6
  - *Completed*
- Post scan of target 6 (exposed in STP101/102, far excursion)
  - centre, tip 7
  - *Completed*
- Tip image of tip 1
  - *Completed*
- Diagnostic line scans of target 13 to investigate odd slope/saturation effects
  - i.e. with control data enabled
  - *Completed*
- Follow-up scan of target 13
  - *Completed*

Additional Notes:

2016-03-30 17:10:00 : Frequency survey of all cantilevers using default parameters



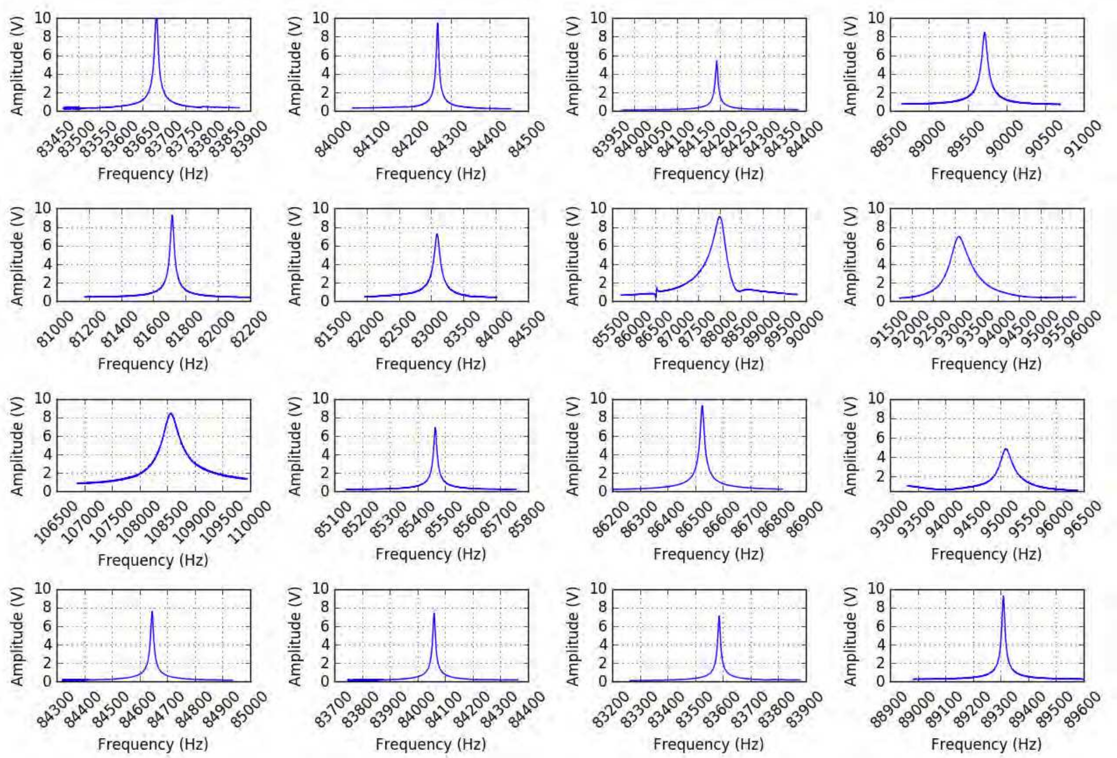
STP103

Planning:

- Post scan of target 11
    - *Completed*
- Follow-up of STP079-1 with tip 1
    - *Completed*
- Further target 10 scans
    - *Completed*
- Further target 13 scans
    - *Completed*

Additional Notes:

2016-04-06 05:10:00 : Frequency survey of all cantilevers using default parameters



Future Planning

- Target 10 - map further away from the centre (laterally and by segment)

  try to find extent of coverage, and see if we can determine if we see a single impact etc.

  Further scans of target 10 made in various future STPs.
- Target 11 - low level scans to check OCM exposures

  Scans of target 11 made in various future STPs.
- Target 12 - follow-up to particles seen

  see if we can see fragments or anything else (only one sided scans so far)

  Scans made in future STPs.
- Target 13 – more scans of particles

  Completed in future STPs.
- Target 14 - follow-up STP083-6 possible particle

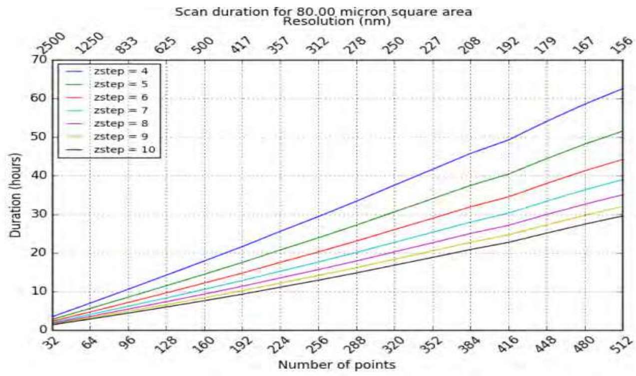
  Scan same area in STP108-11, particle not seen, seems may not be scanning the same area/unknown error
- target - 21 - follow-up to areas not yet medium resolution scanned

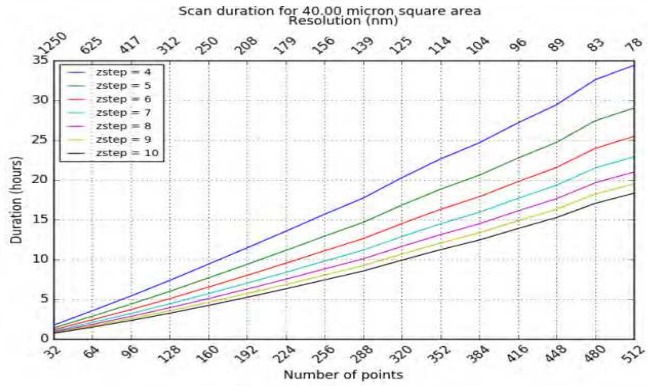
  also follow-up to small scans (10x10)

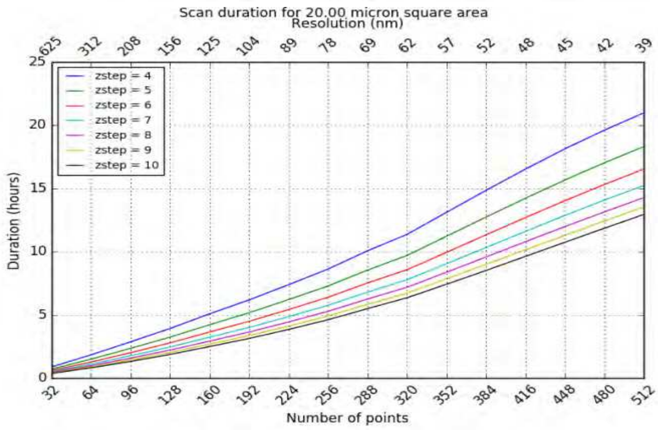
  Not completed-other targets took priority
- Increase Z step size to speed up future scans

  To speed up image acquisition in the "final phase" of Rosetta, without any complicated OBSW changes, the most straightforward thing to do is increase the Z step size. This is the step by which the Z piezo is advanced before checking the AC/DC value to see if it is below the threshold, or in the window. Typically we use a value of 4 (meaning 4x the Z calibration factor of 0.164 = 0.656 nm).

  Looking at values in the range 4-10, and for various typical sizes:







In principle should not be a problem from the force perspective using a large Z step, since it's just equivalent to having a slightly larger separation between the working and set points (i.e. we tap on the sample a little longer).

We do have to be careful that we adjust the frequency sweep settings accordingly so that we stay inside the window.

Larger Z step was implemented in future scans.

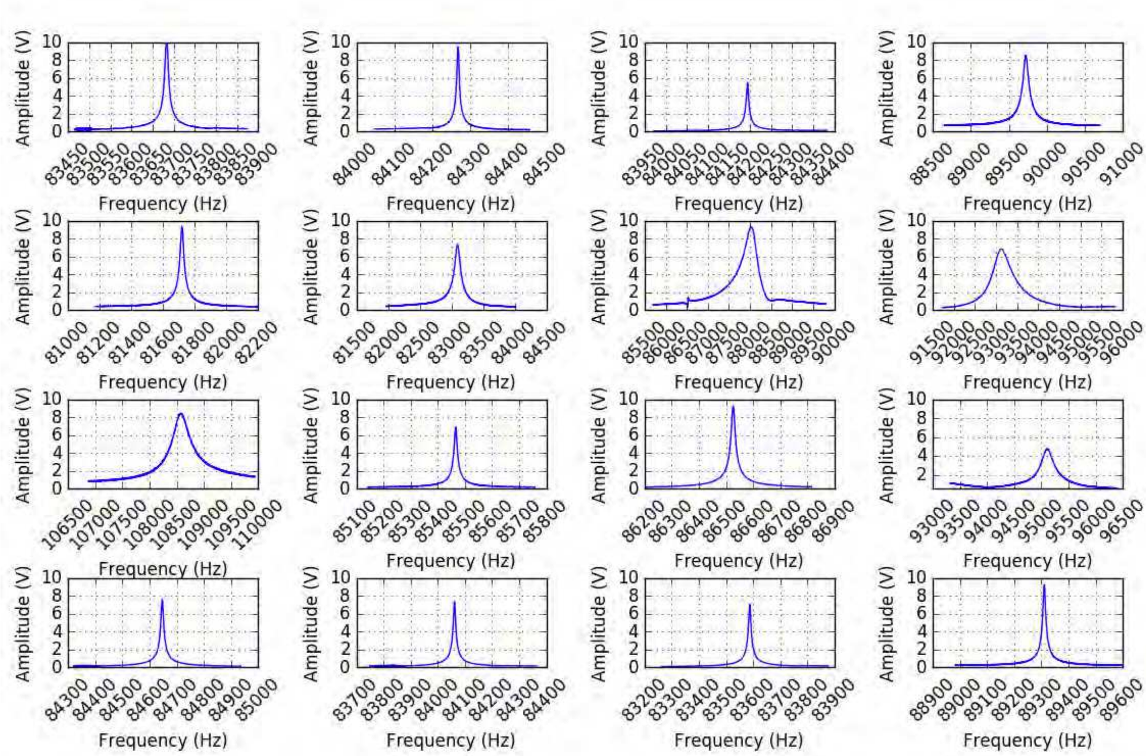
STP104

Planning:

- Tip image of tip 1 (failed in STP102)
    - *Completed*
- Coarse post-excursion scan of target 6 with tip 7
    - (failed in STP102)
    - *Completed*
- Follow-up scan of target 13
    - repeat of aborted scan from STP102, larger retract, magnetic mode on
    - attempt to image cluster at centre of target 13 (moderate scan, frequency vector and 1st, 2nd rank zooms)
    - *Completed*

Additional Notes:

2016-04-13 05:10:00 : Frequency survey of all cantilevers using default parameters

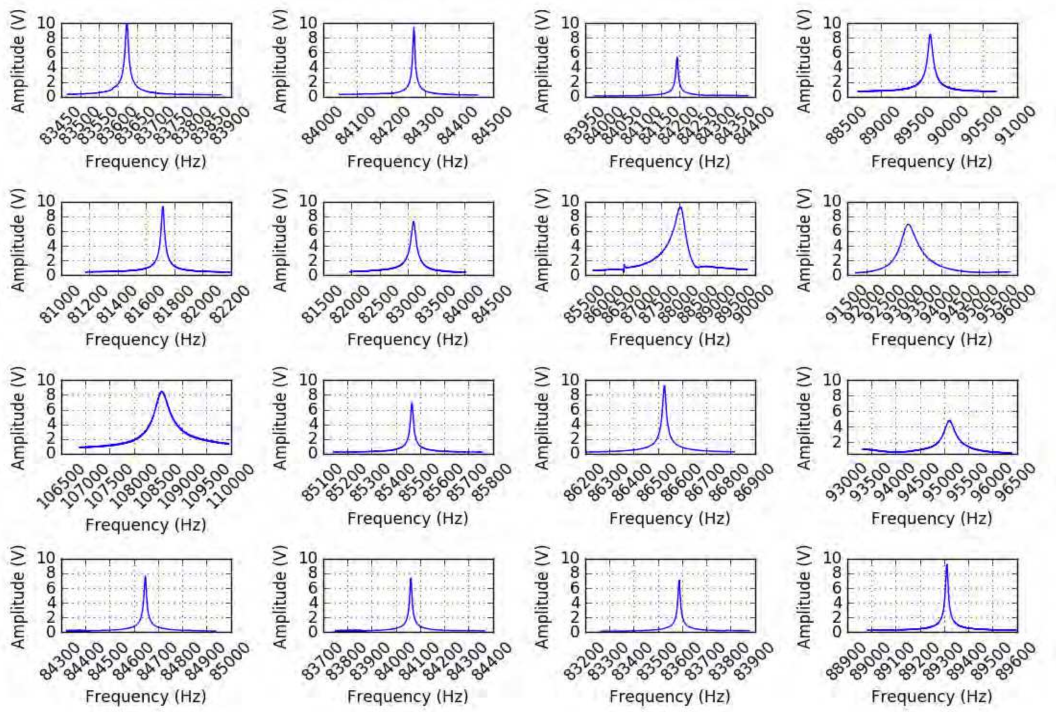


STP105

Planning:

Additional Notes:

2016-04-20 05:10:00 : Frequency survey of all cantilevers using default parameters



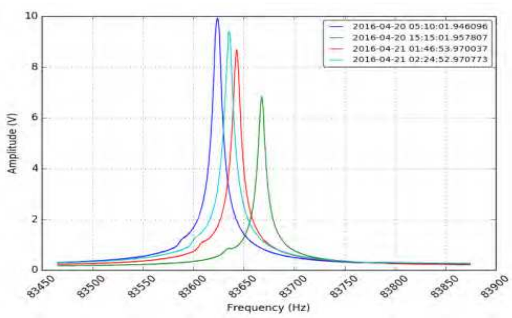
2016-04-20 09:15:00 : OBSW upgrade

2016-04-20 15:15:00 : OBSW upgrade end

STP105-1. RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/IMG_1609623_1612500_060_ZS :

Follow-up to STP103-4, lower left cluster.

Most of the image maximum extension reached: possibly due to still insufficient warm-up after upgrade. The tip 1 frequency scans (1st before the update, 2nd after, 3+4 at start of the scan):



STP106

Planning:

- Increased Z step size
- Repeat tiled 10x10 scans on target 6
    - *Completed STP109-7,8,9,10*
- Repeat zoom that failed (in STP100-6, STP102-3, STP104-3) with tip 2
    - *Completed*
- Further magnetic prep line scans
- Tip 1 image (failed in previous STPs)
- Tip 15 image (512x512 with 4x4µm)
- Re-schedule of target 13 cluster with tip 2 (failed in STP104)
- Target 13 follow-up at -192 µm (central stripe) with tip 2

Additional Notes:

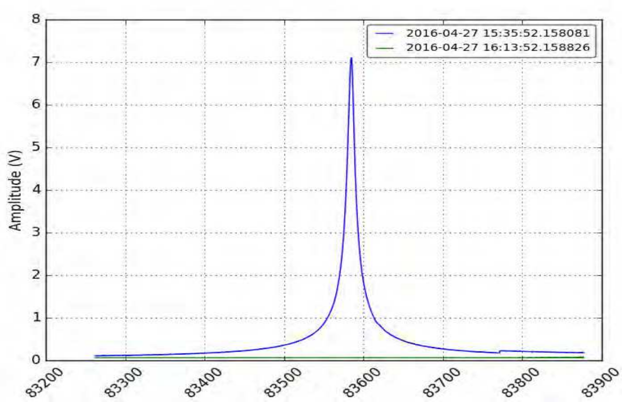
2016-04-27 05:10:00 : Frequency survey of all cantilevers using default parameters

cantilever 15 resonance vanished
No problems according to event history, but no data - due to ground station problems.
Recovered key values from House Keeping.

Failed operations

2016-04-27 05:57:52 : Tip image of tip 1, wheel re-try enabled (2 attempts). FAIL.
No data - due to ground station problems.

2016-04-27 15:18:52 : High resolution tip calibration of cantilever 15, hybrid mode, main scan Y: Failed scan.
Tip 15 resonance vanishes.



2016-04-28 16:26:52 : Tip 2 control data tests for magnetic mode + various Z steps: FAILED
Linear move timeout, approach failed.
Increase timeouts
Add pre-move to line scans.

STP106-1. RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/IMG_1609623_1612500_095_ZS :

Repeat follow-up of STP100-6 with tip 2 (extended piezo range).
Magnetic mode enabled.
Piezo centred at zero (to allow more retraction / height).
Attempted to scan this in STP102-3 but lost resonance. And again in STP104-3 with increased retraction. Got a full scan, but with lots of distortion. Decided to scan with tip 2 and shifted centre in this STP.
Scan eventually aborts.

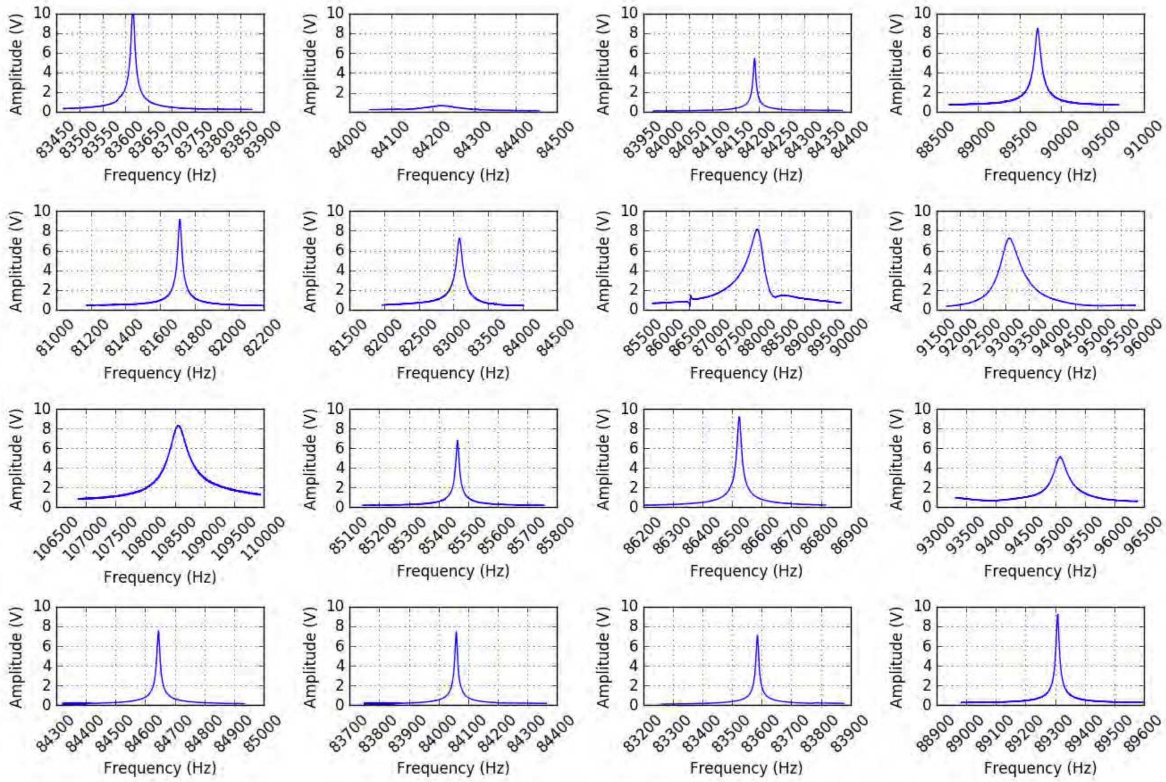
STP107

Planning:

- Frequency survey of all cantilevers using default parameters
- Repeat scan of STP100-1 with tip 8
- Repeat scan of STP103-3 with tip 1
- Zoom scan of target 13 with tip 2
- Tip image of tip 1
- Coarse scan of facet 13 with tip 1, tip offset 0, segment 210
- Coarse scan of facet 13 with tip 1, tip offset 0, segment 206
- Coarse scan of facet 13 with tip 1, tip offset -192, segment 207
- Coarse scan of facet 13 with tip 1, tip offset 192, segment 207
- Coarse scan of facet 13 with tip 1, tip offset -192, segment 209
- Coarse scan of facet 13 with tip 1, tip offset 192, segment 209
- Coarse scan of facet 13 with tip 1, tip offset 256, segment 209 - zstep 8

Additional Notes:

2016-05-04 05:10:00 : Frequency survey of all cantilevers using default parameters



Tip 2 looks bad.

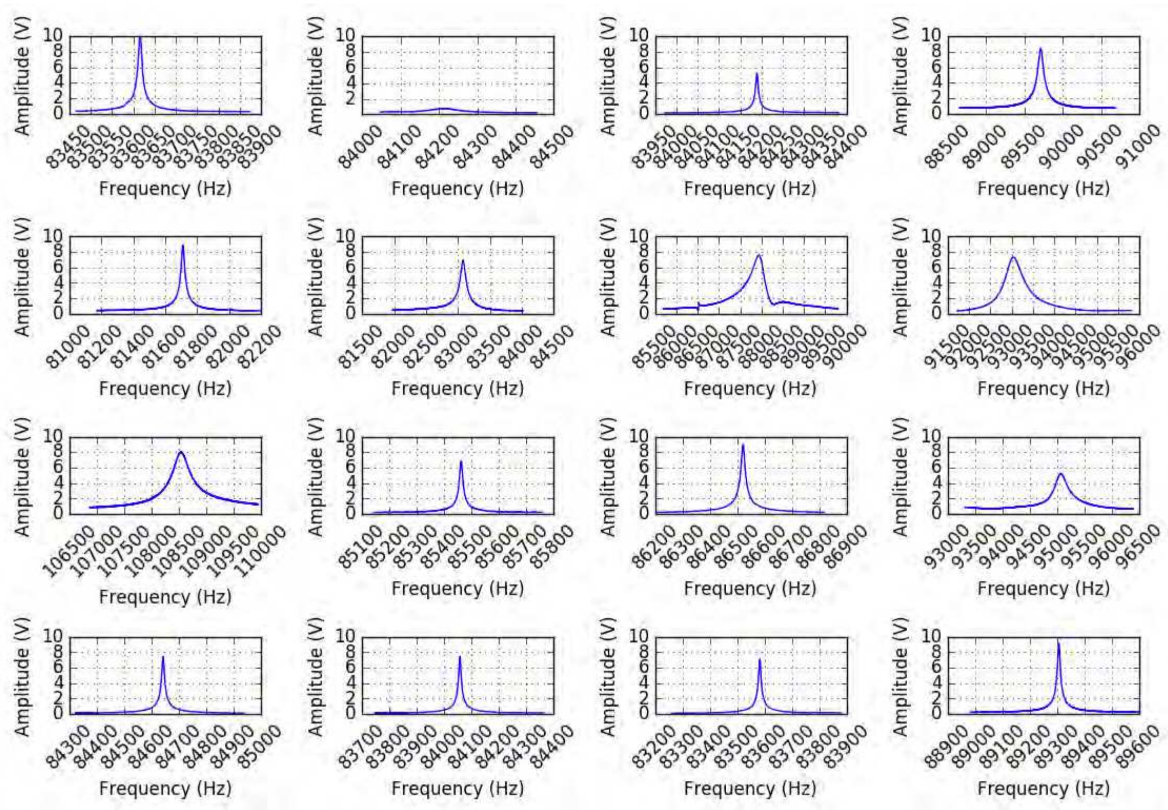
STP108

Planning:

- Frequency survey of all cantilevers using default parameters
- Frequency tests of cantilever 2
- Repeated frequency scans with problematic cantilever (1, 12, 15)
- Line scans on target 10 to check sample slope far from the centre
- High resolution tip calibration of cantilever 15, hybrid mode, main scan Y
- Scans with tip 1 in either direction from fluffy particle
- Attempt to get a tip image of tip 2 (after shaking earlier)
- Coarse scan of facet 13 with tip 1, tip offset 0, segment 205
- Coarse scan of facet 13 with tip 1, tip offset 0, segment 204
- Coarse scan of facet 13 with tip 1, tip offset 0, segment 210
- Coarse scan of facet 13 with tip 1, tip offset 0, segment 211
- Coarse scan of target 10 scan with tip 9, centre of segment 157
- Coarse scan of target 10 scan with tip 9, centre of segment 163
- Repeat of STP083-6 with tip 1

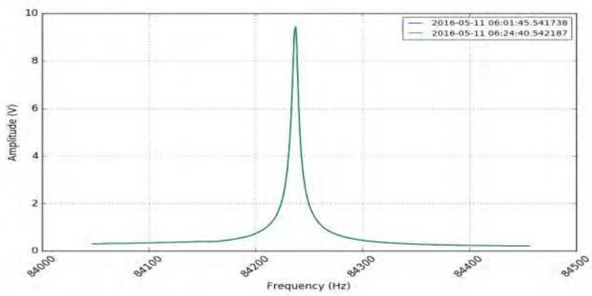
Additional Notes:

2016-05-11 05:10:00 : Frequency survey of all cantilevers using default parameters

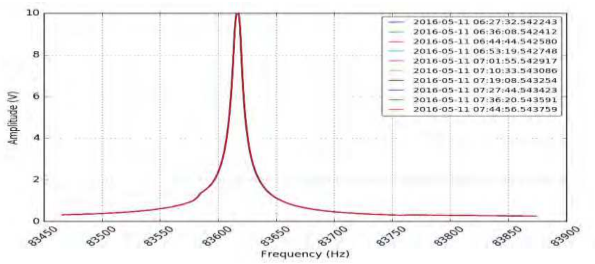


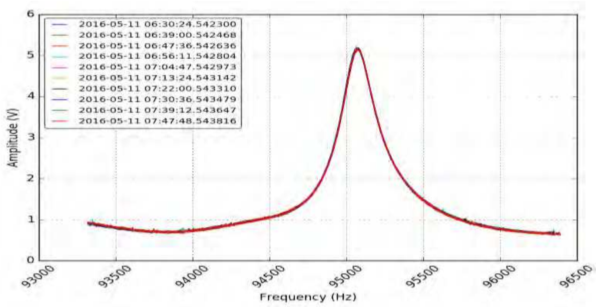
2016-05-11 05:58:52 : Frequency tests of cantilever 2

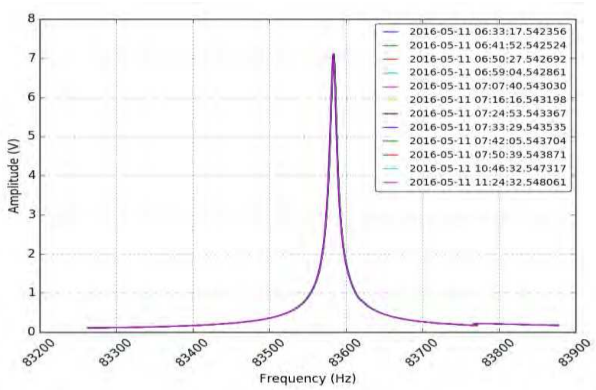
Normal behaviour already seen after first shaking. First and last of the "normal" scans:



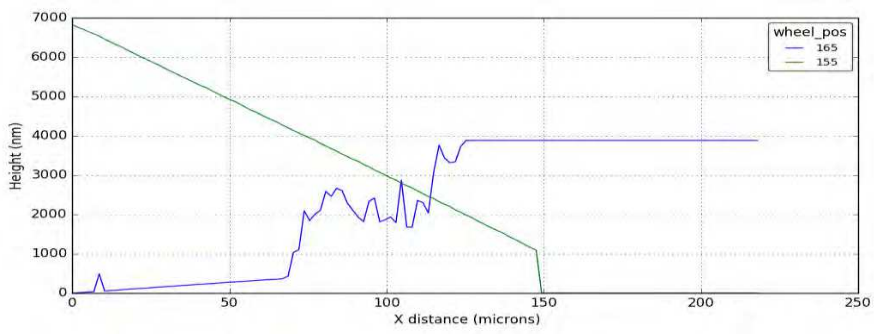
2016-05-11 06:27:32 : Repeated frequency scans with problematic cantilever (1, 12, 15)







2016-05-11 07:53:32 : Line scans on target 10 to check sample slope far from the centre (165 and 155)



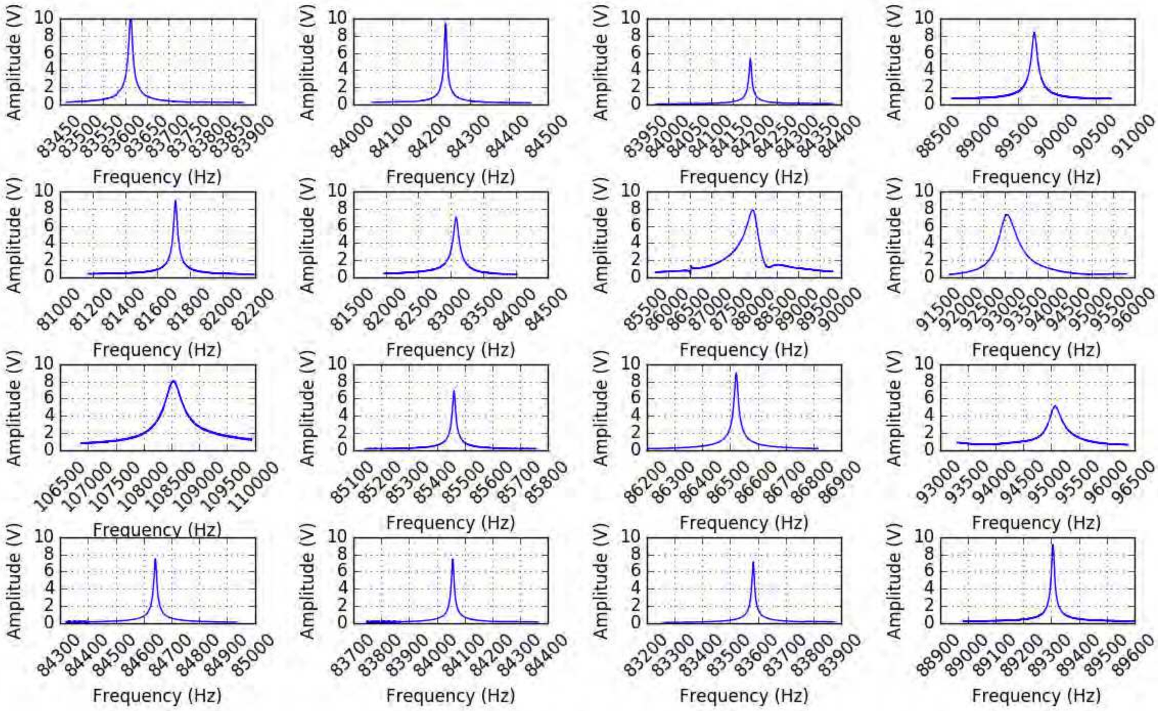
STP109

Planning:

- Frequency survey of all cantilevers using default parameters
- Another attempt to get a tip image of tip 1!
- Tip 8 calibration, dynamic mode, before contact mode scan
- Tip 8 dynamic mode scan of target 13
- Contact mode scan of target 13 with tip 8, tip offset -64 um
- Repeat scan of STP107-1 after contact mode scan
- Tip 8 calibration, dynamic mode, after contact mode scan
- 4x high resolution post-scans of target 6 with cantilever 1 (8x8 micron)
- Coarse scan of facet 13 with tip 1, tip offset 256, segment 206, tip offset -64 um
- Coarse scan of facet 13 with tip 1, tip offset 256, segment 206, tip offset -128 um
- Enabling adaptive retraction with safety=2, min retract 2.5um. Monitoring adaptive paramameters
- Coarse scan of facet 13 with tip 1, tip offset -64, segment 210
- Repeat scan of STP103-3 with tip 1 - higher resolution, magnetic mode

Additional Notes:

2016-05-18 15:10:00 : Frequency survey of all cantilevers using default parameters



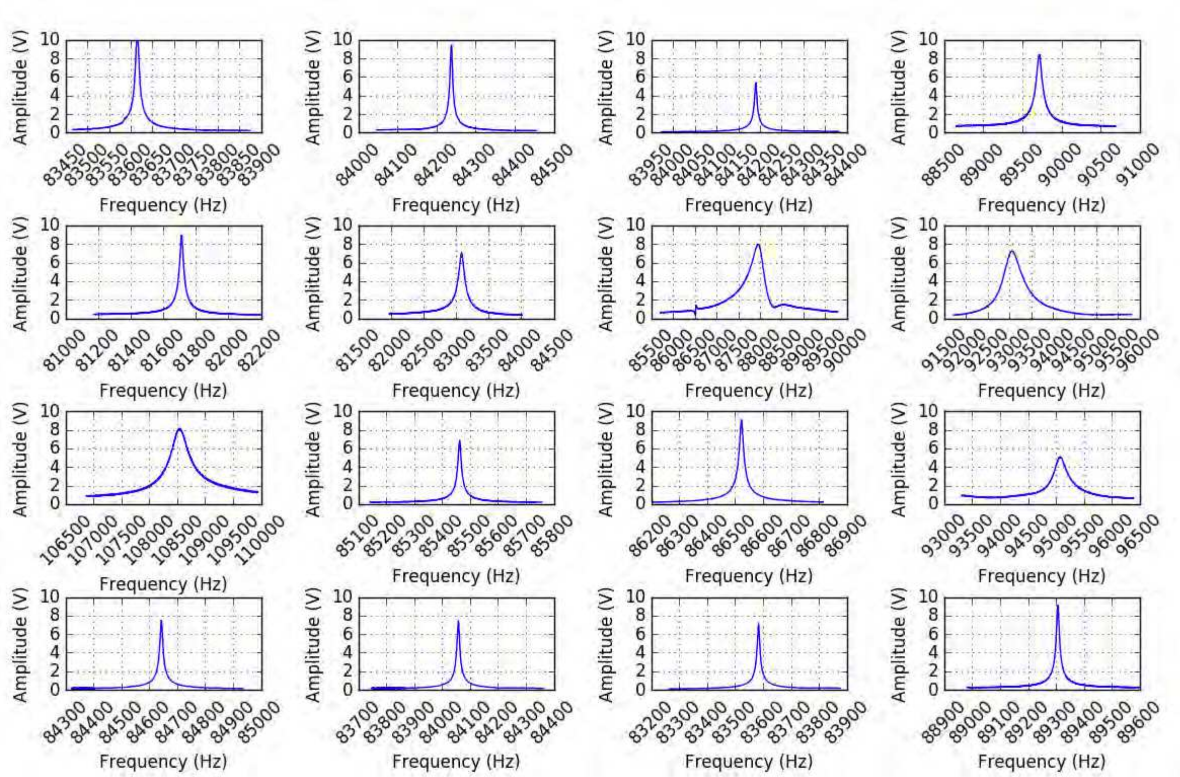
STP110

Planning:

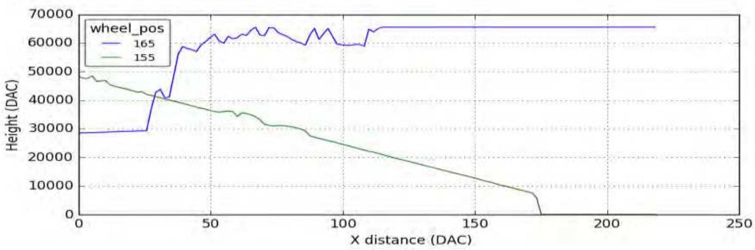
- Frequency survey of all cantilevers using default parameters
- High resolution tip calibration of cantilever 15, hybrid mode, main scan Y
- Line scans on target 10 to check sample slope far from the centre (tuning centre)
- Follow-up STP108-6 facet 13/tip 1, tip offset +40, segment 204
- Coarse scans of facet 13 with tip 1

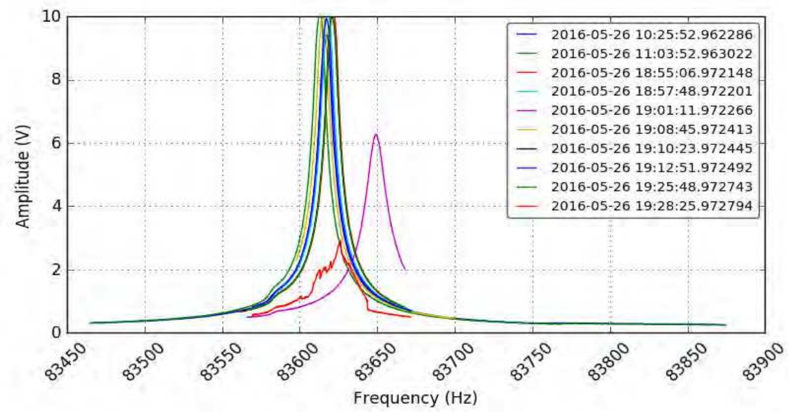
Additional Notes:

2016-05-25 05:10:00 : Frequency survey of all cantilevers using default parameters



2016-05-26 07:08:52 : Line scans on target 10 to check sample slope far from the centre (tuning centre)





Problem with tip 1.

Repeat in later STP.

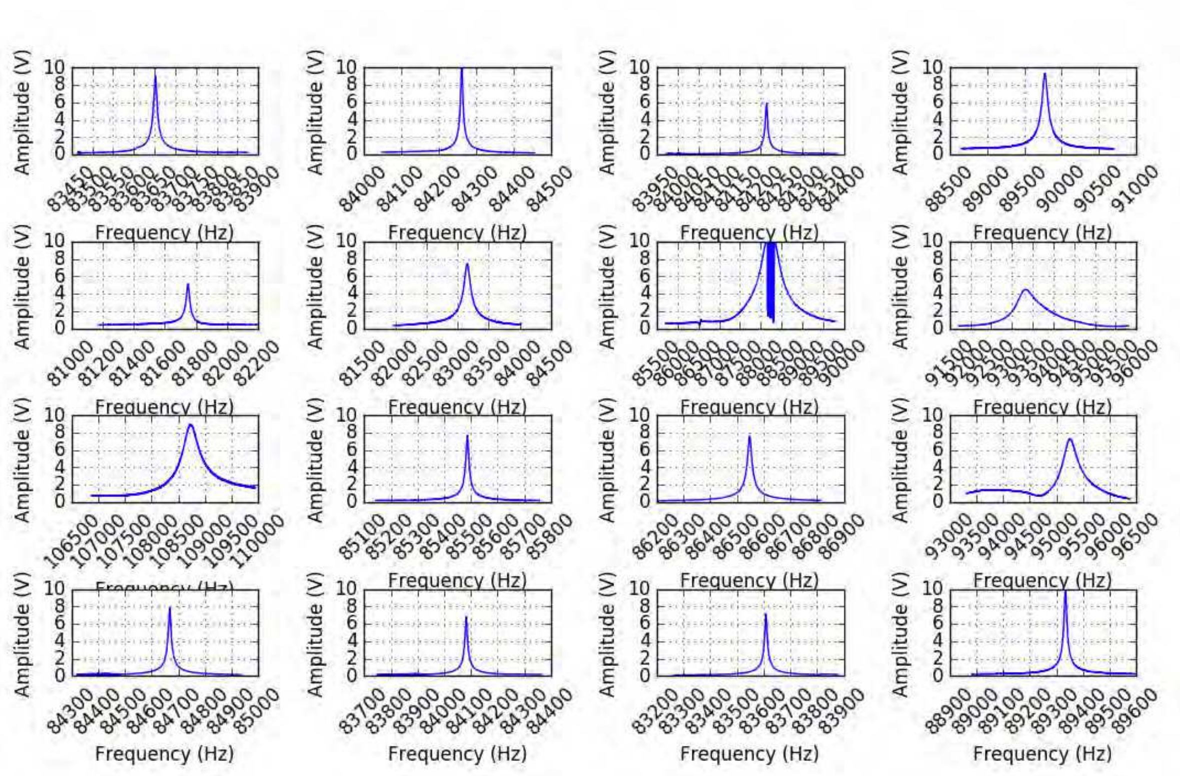
STP111

Planning:

- Frequency survey of all cantilevers using default parameters
- Coarse scans of facet 13 with tip 1
- Tip calibration of cantilever 4

Additional Notes:

2016-06-01 05:10:00 : Frequency survey of all cantilevers using default parameters



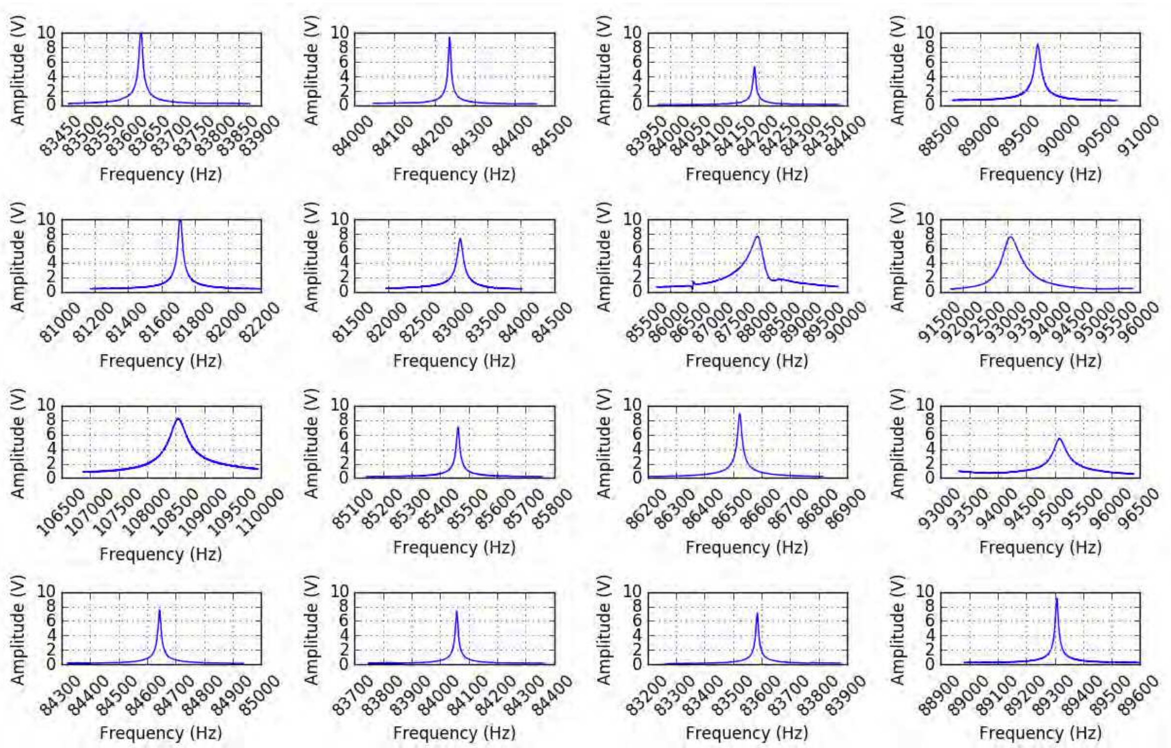
STP112

Planning:

- Frequency survey of all cantilevers using default parameters
- Coarse scan of facet 13 with tip 4
- Repeat of STP107-5 with centre to higher Z HV and tip 4
- Coarse scans of facet 13 with tip 1
- Repeat of STP108-7 with tip 4 prior to frequency vector
- Coarse scans of facet 13 with tip 4
- Tip calibration of cantilever 4
- XY calibration scan using tip 4
- Coarse scan of facet 13 with tip 4
- 2016-06-14 06:00:00 : OBSW upgrade start
- 2016-06-14 16:00:00 : OBSW upgrade end
- 2016-06-14 16:12:00 : Dummy scan (not at surface) to warm up after OBSW upgrade

Additional Notes:

2016-06-08 05:10:00 : Frequency survey of all cantilevers using default parameters



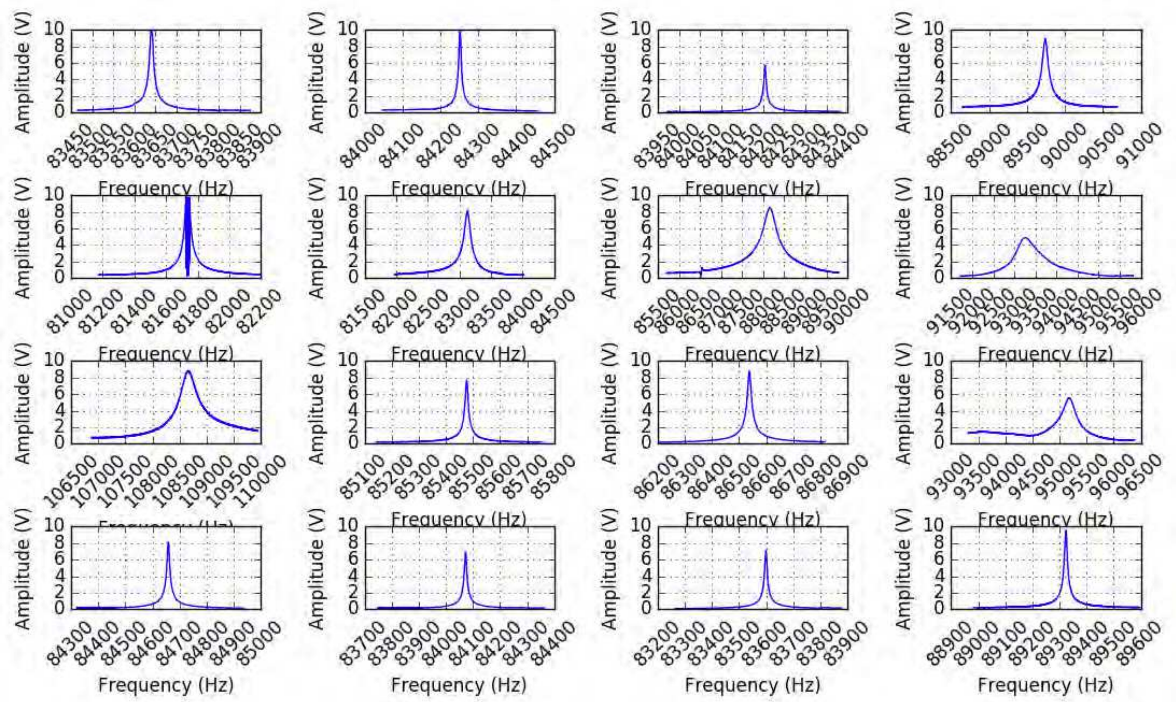
STP113

Planning:

- Frequency survey of all cantilevers using default parameters
- Coarse scans of facet 13 with tip 1
- High resolution tip calibration of cantilever 4
- Coarse scans of facet 13 with tip 4
- Coarse scan of target 10 scan with tip 9
- Coarse scan of facet 13 with tip 4
- Tip 8 dynamic mode scan of target 13
- Contact mode scan of target 13 with tip 8
- Tip 8 dynamic mode scan of target 13 after contact scan
- Zoom STP111-4

Additional Notes:

2016-06-15 05:10:00 : Frequency survey of all cantilevers using default parameters



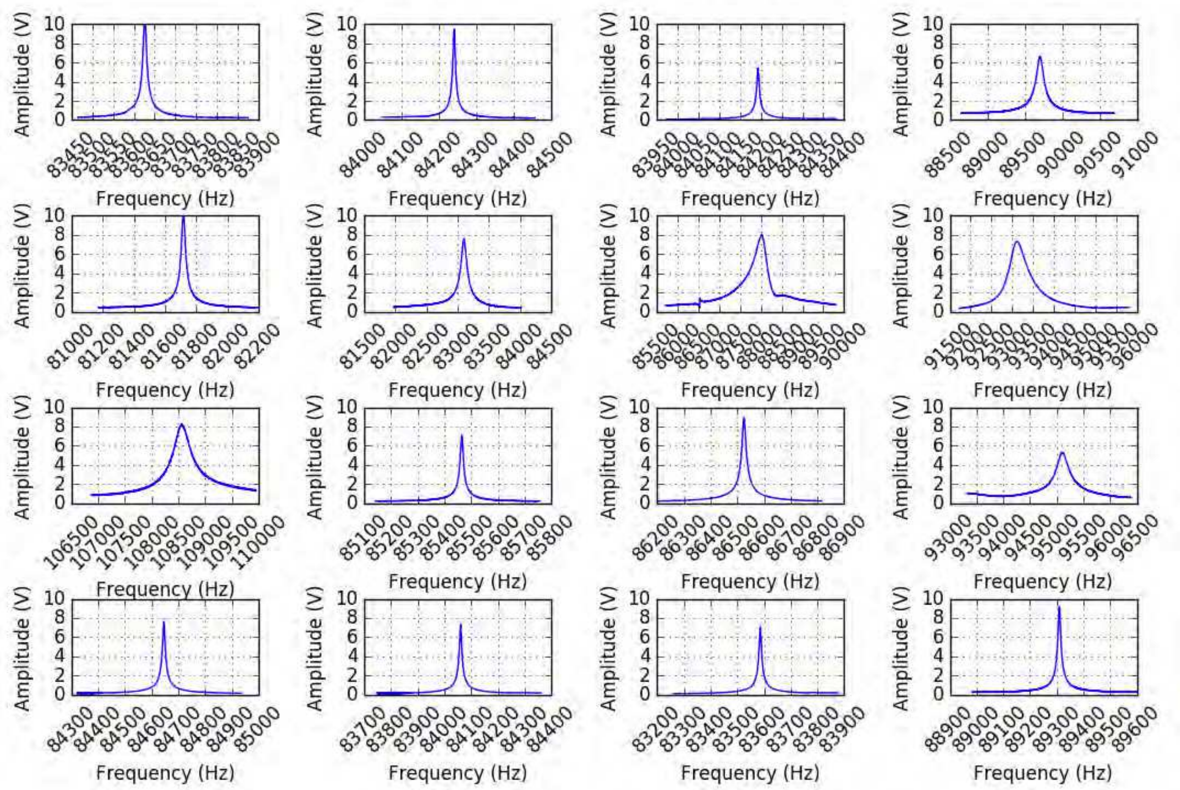
STP114

Planning:

- Frequency survey of all cantilevers using default parameters
- Coarse scans of facet 13 with tip 4
- High resolution tip calibration of cantilever 8
- Coarse scan of target 10 scan with tip 9
- Auto-zoom of target 13 following feature vector tip 4
- Repeat of STP112-6 with Z piezo centre shift
- Coarse scan of target 11
- Repeat of STP112-2 with centre to higher Z HV and tip 4
- Repeat of STP112-5 with tip 4 to see any overlap

Additional Notes:

2016-06-22 05:10:00 : Frequency survey of all cantilevers using default parameters



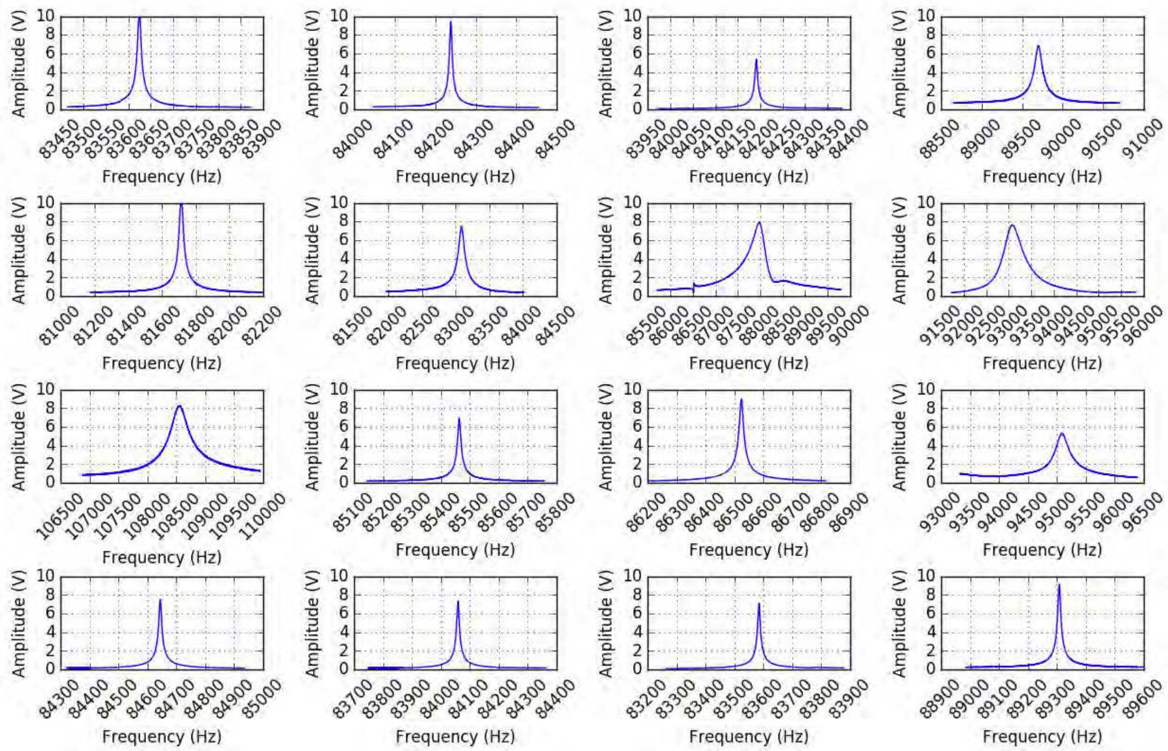
STP115

Planning:

- Frequency survey of all cantilevers using default parameters
- Tip image of tip 2
- High resolution tip calibration of cantilever 4
- Coarse scan of facet 13 with tip 2
- 40x40um scan of facet 13 with tip 2
- 10x10um scan of facet 13 with tip 2
- 1x1um scan of facet 13 with tip 2
- Tip 8 dynamic mode scan of target 13
- Contact mode scan of target 13 with tip 8
- Tip 8 dynamic mode scan of target 13 - after contact scan
- Tip calibration of cantilever 8
- Repeat of STP113-2 with tip 2
- Retry of coarse scan of facet 13 with tip 4
- Retry (after STP106) 80x40 micron scan of the bottom half of STP100-5, tip 2

Additional Notes:

2016-06-29 05:10:00 : Frequency survey of all cantilevers using default parameters



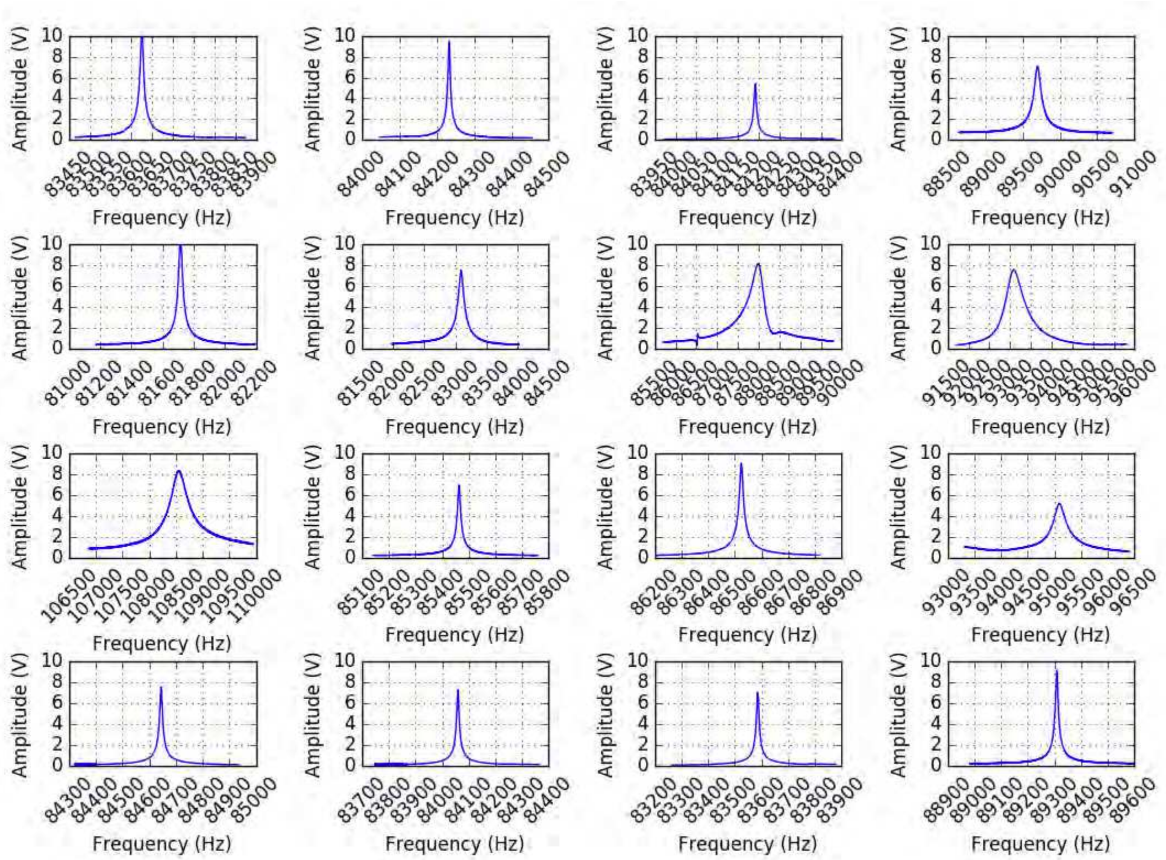
STP116

Planning:

- Frequency survey of all cantilevers using default parameters
- Coarse scans targets 13 and 10
- Tip image tip 8

Additional Notes:

2016-07-06 05:10:00 : Frequency survey of all cantilevers using default parameters



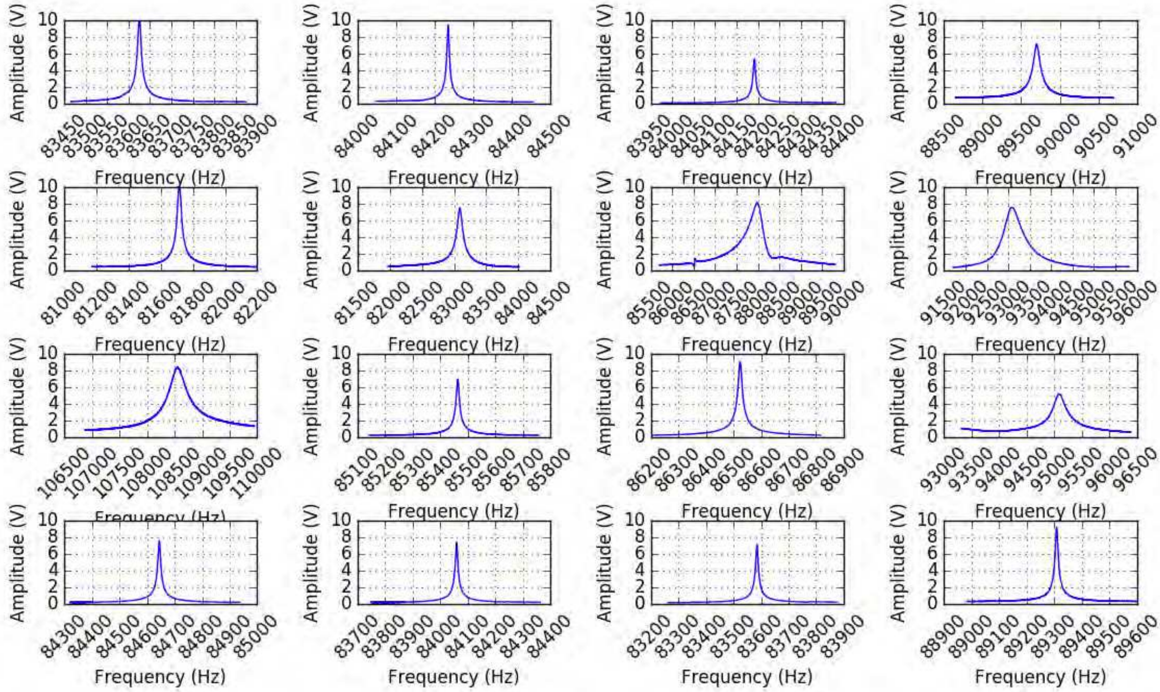
STP117

Planning:

- Frequency survey of all cantilevers using default parameters
- Repeat height calibration scans with different piezo extensions in different order
- Coarse re-scan of STP100-6 with tip 3
- Coarse scan of target 10 scan with tip 9
- Coarse scan of target 10 scan with tip 9
- Scan of larger particles at centre of STP114-2 tip 3
- Coarse scan of target 11 (exposed during OCMs) - checking for July outburst
- Tip calibration of cantilever 3, hybrid mode, main scan Y

Additional Notes:

2016-07-13 05:10:00 : Frequency survey of all cantilevers using default parameters



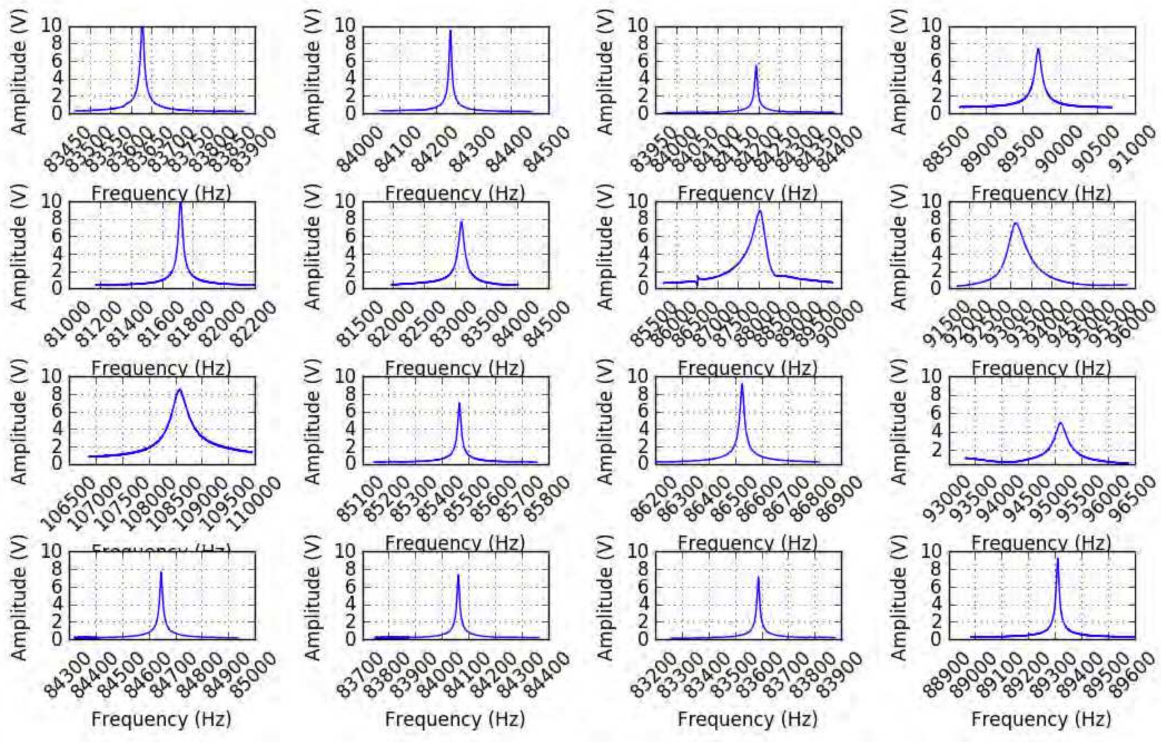
STP118

Planning:

- Frequency survey of all cantilevers using default parameters
- Tip 8 dynamic mode scan of target 13
- Contact mode scan of target 13 with tip 8
- Tip 8 dynamic mode scan of target 13 - after contact scan
- Repeat of STP114-10 zooming on top right particle
- Repeat of STP114-10 zooming on lower left particle
- Repeat S107-5 with tip 3
- Further scans of target 12
- Coarse scan of facet 13 with tip 4
- Follow-up from S113-16 with tip 4. Zoom top left
- Shake tips 5 and 7
- Line scans in CON mode with tip 5, facet 6 various setpoints and Z steps
- Line scans in CON mode with tip 5, facet 24 various setpoints and Z steps
- Line scans in CON mode with tip 7, facet 6 various setpoints and Z steps
- Line scans in CON mode with tip 7, facet 24 various setpoints and Z steps

Additional Notes:

2016-07-20 05:10:00 : Frequency survey of all cantilevers using default parameters



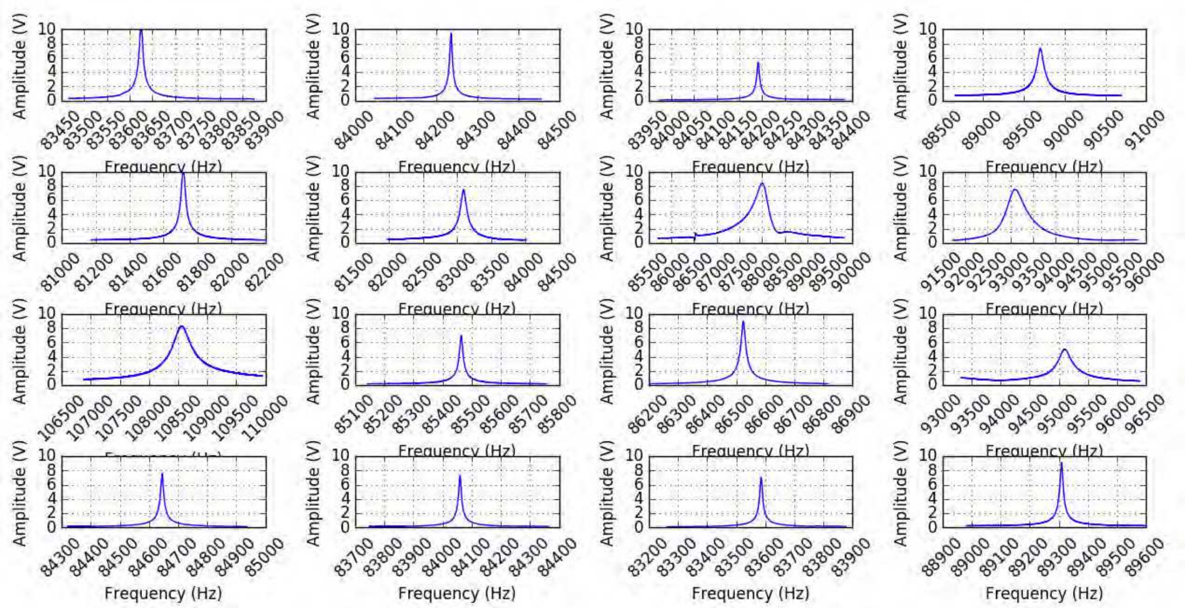
STP119

Planning:

- Frequency survey of all cantilevers using default parameters
- Shake tip 3
- Re-scan of STP117-8 with tip 3
- Zoom scan of STP117-8 with tip 3
- Coarse re-scan of STP114-1 with tip 4
- Cantilever 1 edge finding scan
- Cantilever 2 edge finding scan
- Cantilever 3 edge finding scan
- Cantilever 4 edge finding scan
- High resolution tip calibration of cantilever 8

Additional Notes:

2016-07-27 05:10:00 : Frequency survey of all cantilevers using default parameters



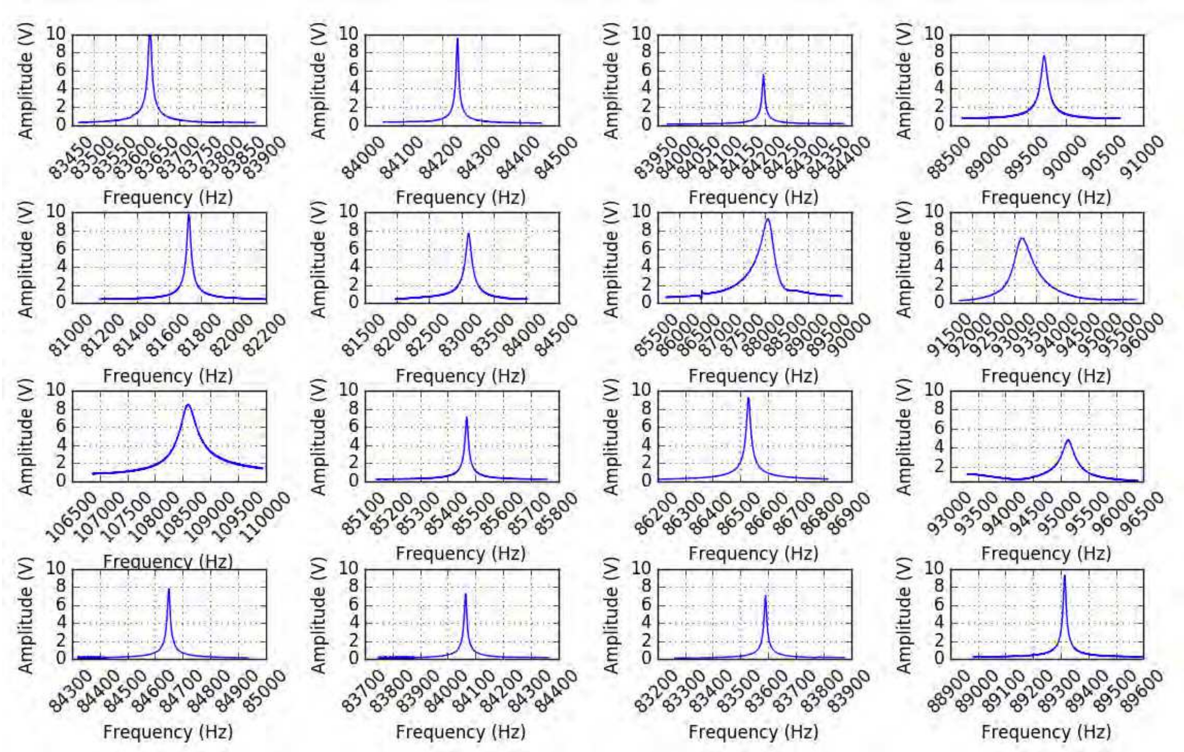
STP120

Planning:

- Frequency survey of all cantilevers using default parameters
- Tip calibration of cantilever 8, hybrid mode, main scan Y
- High resolution tip calibration of cantilever 4
- Tip calibration of cantilever 3
- Coarse scan of facet 13 with tip 2
- Repeat STP118-6 with centre shifted and higher res
- Coarse scan of target 13
- Tip 5 dynamic mode scan of target 13
- Contact mode scan of target 13 with tip 5
- Tip 5 dynamic mode scan of target 13
- Repeat of STP117-11 zoom on top left particle

Additional Notes:

2016-08-03 05:10:00 : Frequency survey of all cantilevers using default parameters



STP121

Planning:

- Tip calibration of cantilever 4
- Repeat of STP118-8
- Auto-zoom of target 13 following feature vector, tip 4
- Attempt to re-scan particle STP107-5 with tip 5
- Attempt to zoom (10x10um) particle S107-5 with tip 5
- Shake tip 9
- Coarse repeat of STP084-6 prior to contact/control data scan
- Contact mode repeat of STP084-6, tip 9, control data ON
- repeat of STP084-6 after contact/control data scan
- Coarse repeat scan of target 10 with cantilever 9 (repeat of S082-4)
- Contact mode repeat of STP082-4, tip 9, control data ON
- Coarse repeat scan of target 10 with cantilever 9 after contact mode
- High resolution tip calibration of cantilever 9

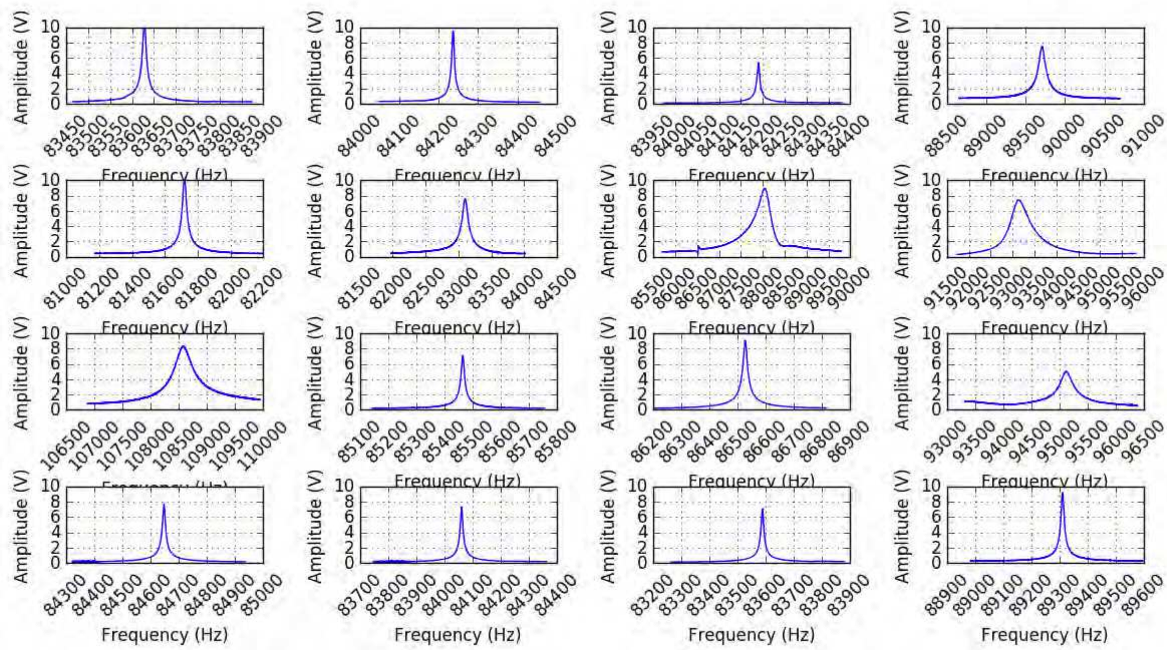
STP122

Planning:

- Frequency survey of all cantilevers using default parameters
- Shaking tip 4
- Coarse scans of facet 13 with tip 4
- Tiled high resolution scans of facet 13 with tip 4

Additional Notes:

2016-08-15 10:15:00 : Frequency survey of all cantilevers using default parameters



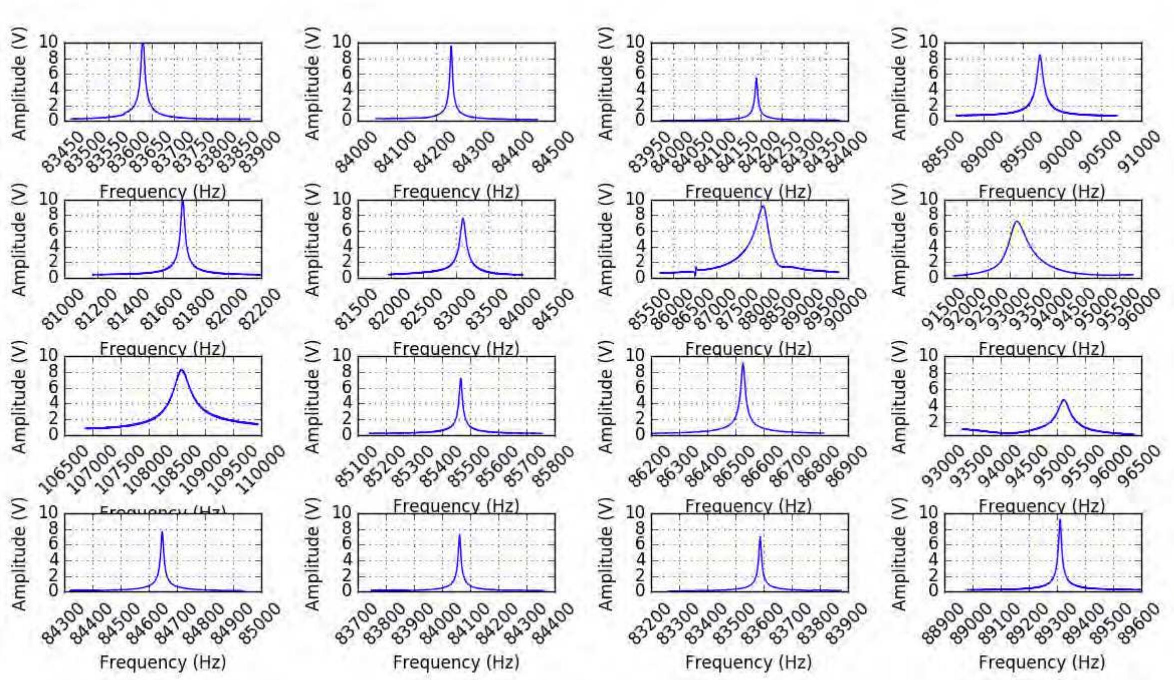
STP123

Planning:

- Frequency survey of all cantilevers using default parameters
- Repeat scans of target 13
- Repeat scan of STP098-1 prior to contact mode scan
- Contact mode repeat of STP098-1, tip 9, control data ON
- Repeat scan of STP098-1 after contact mode scan

Additional Notes:

2016-08-21 10:16:00 : Frequency survey of all cantilevers using default parameters



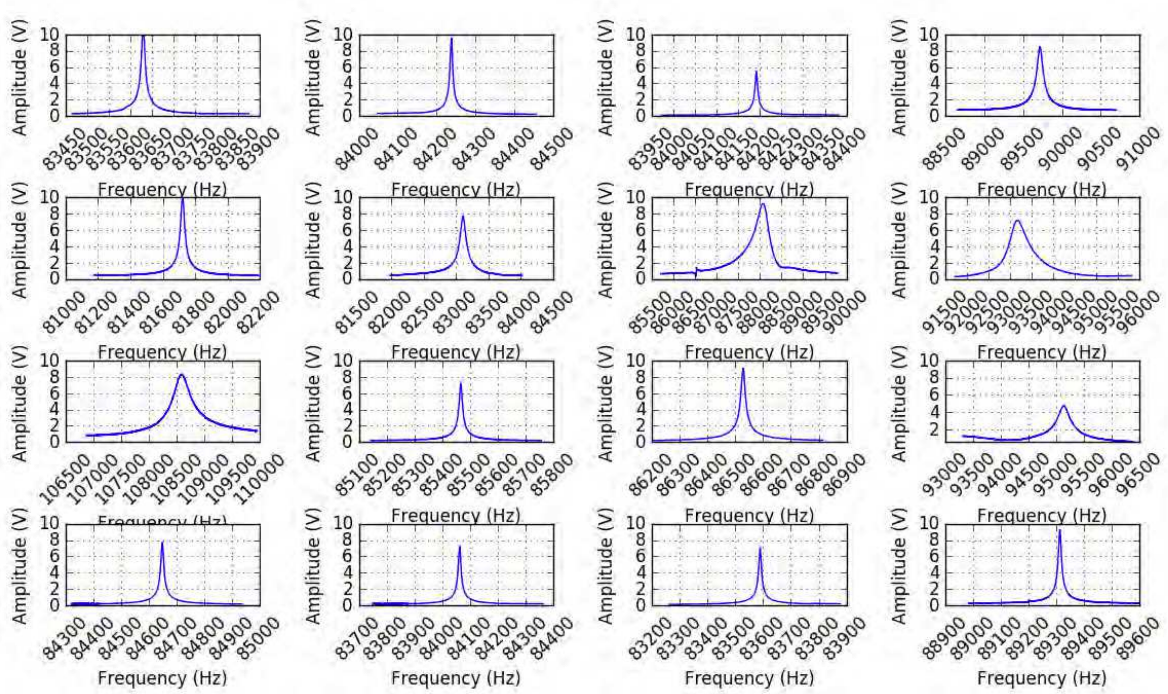
STP124

Planning:

- Frequency survey of all cantilevers using default parameters
- Tip calibration of cantilever 4
- Tip calibration of cantilever 9
- Coarse repeat scan of target 10 with cantilever 9 (repeat of STP082-4)
- Contact mode repeat of S082-4, tip 9, control data ON
- Repeat of STP123-5 at higher resolution
- Auto-zoom of target 13 following feature vector, tip 4

Additional Notes:

2016-08-30 10:15:00 : Frequency survey of all cantilevers using default parameters



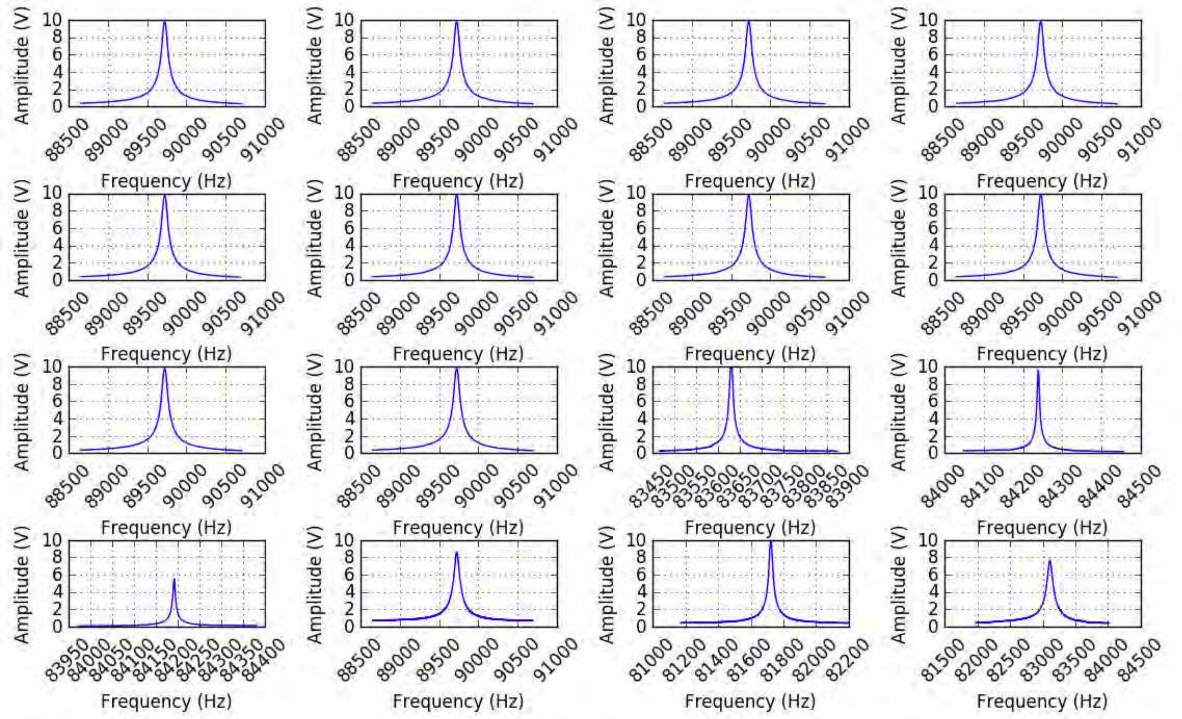
STP125

Planning:

- Frequency survey of all cantilevers using default parameters
- Repeat of STP123-1 (facet 13, tip 4)
- Zoom of STP123-9
- Repeat of STP122-1 (facet 13, tip 4)
- Repeat of S122-1 (facet 13, tip 4)

Additional Notes:

2016-09-02 10:16:40 : Frequency survey of all cantilevers using default parameters



STP126

Planning:

- Frequency survey of all cantilevers using default parameters
- Coarse scan of facet 13 with tip 2
- Repeat STP100-3 (coarse overview, tip 4)
- Repeat left hand side of STP123-8 (tweak centre)
- Left hand side of STP123-10
- Auto-zoom of target 13 following feature vector, tip 4
- Zoom of cluster in STP123-20
- Coarse scans of facet 13

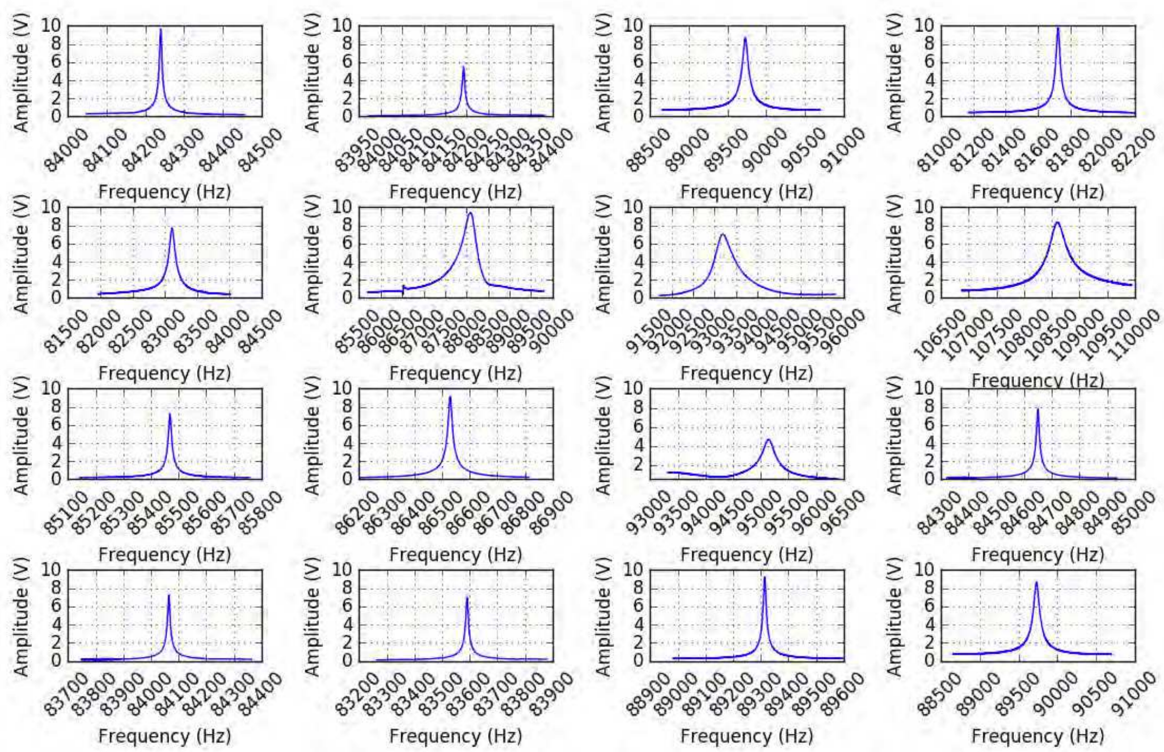
STP127

Planning:

- Shake cantilever 4
- Frequency survey of all cantilevers using default parameters
- Tip calibration of cantilever 4
- Repeat S120-10
- Repeat S120-10 contact mode
- Repeat S120 after contact mode
- Repeat scans on targets 13 and 10, also in contact mode
- Additional height calibration scans at different piezo extensions
- XY calibration scan
- Tip image tip 4

Additional Notes:

2016-09-11 10:14:40 : Frequency survey of all cantilevers using default parameters



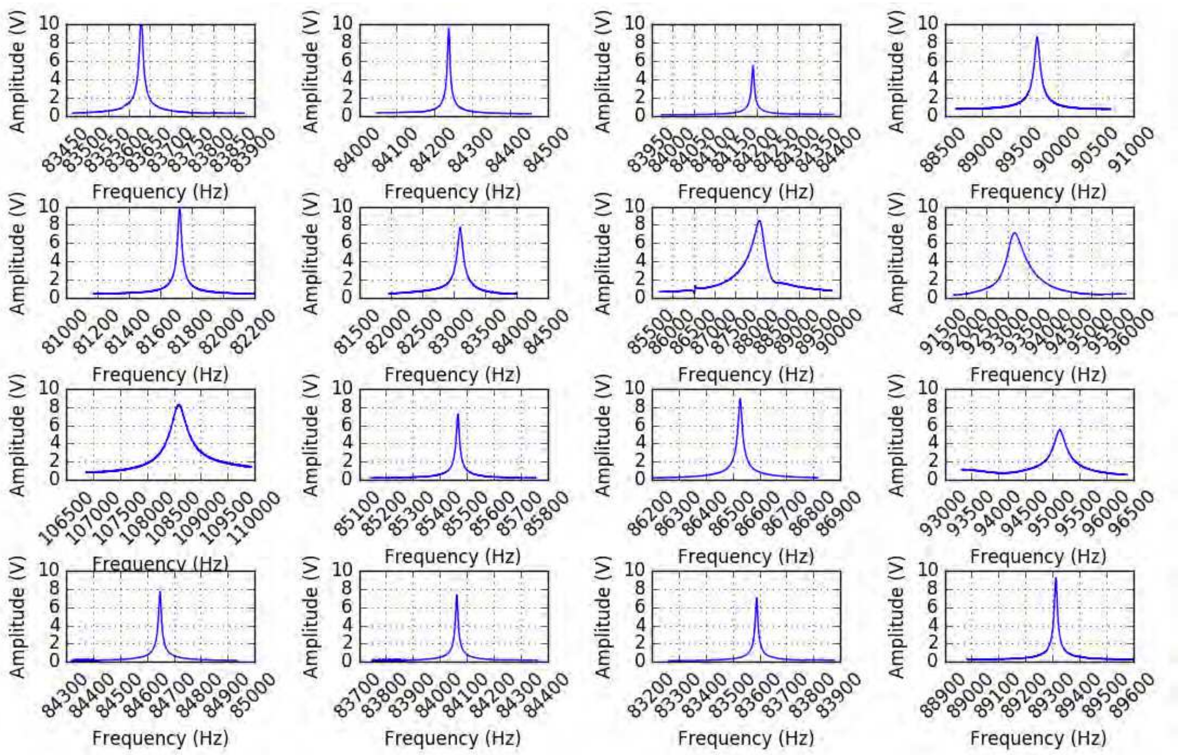
STP128

Planning:

- Frequency survey of all cantilevers using default parameters
- Dummy scan (not at surface) to warm up after standby
- Repeat of STP127-7 with tweaked centre
- Contact mode scan with control data
- S127-8 (higher resolution) before contact scan
- Contact mode scan with control data, repeat S127-8
- Repeat S127-8 (low resolution) after contact scan
- Dummy scan (not at surface) to warm up after standby
- Repeat of S123-13
- Contact mode scan with control data

Additional Notes:

2016-09-20 10:16:00 : Frequency survey of all cantilevers using default parameters



STP129

Planning:

- Coarse scan of facet 13 with tip 4, segment 211, tip offset 240 um
- Coarse scan of facet 13 with tip 4, segment 211, tip offset -240 um
- Coarse scan of facet 13 with tip 4, segment 212, tip offset -240 um
- Coarse scan of facet 13 with tip 4, segment 212, tip offset 240 um
- High resolution image of tip calibration sample, tip 8, hybrid mode, main scan Y

Appendix A - Rosetta planning periods

The following table lists the start of each STP (short term planning) cycle and its corresponding medium term planning (MTP) cycle. These planning periods form the basis for commanding and data analysis from Rosetta and are referenced extensively in the report.

MTP	STP	START
1	1	2014-03-17 00:00:00
2	2	2014-04-07 00:00:00
3	3	2014-05-07 12:48:00
3	4	2014-05-21 11:51:00
4	5	2014-06-04 10:50:00
4	6	2014-06-18 09:44:00
5	7	2014-07-02 08:35:00
5	8	2014-07-09 08:00:00
5	9	2014-07-16 07:25:00
5	10	2014-07-23 06:50:00
6	11	2014-08-01 10:00:00
6	12	2014-08-05 10:00:00
6	13	2014-08-12 10:00:00
6	14	2014-08-19 10:00:00
6	15	2014-08-26 10:00:00
7	16	2014-09-02 10:00:00
7	17	2014-09-09 10:00:00
7	18	2014-09-16 10:00:00
8	19	2014-09-23 10:00:00
8	20	2014-09-28 10:00:00
8	21	2014-10-03 10:00:00
8	22	2014-10-07 10:00:00
8	23	2014-10-14 10:00:00
8	24	2014-10-21 10:00:00
9	25	2014-10-24 10:00:00
9	26	2014-10-30 10:00:00
9	27	2014-11-05 10:00:00
9	28	2014-11-11 00:00:00
9	29	2014-11-18 23:25:00
10	30	2014-11-21 23:25:00
10	31	2014-11-25 23:25:00
10	32	2014-12-02 23:25:00
10	33	2014-12-09 23:25:00
10	34	2014-12-16 23:25:00
11	35	2014-12-19 23:25:00
11	36	2014-12-23 23:25:00
11	37	2014-12-30 23:25:00
11	38	2015-01-06 23:25:00
12	39	2015-01-13 23:25:00
12	40	2015-01-20 23:25:00
12	41	2015-01-27 23:25:00
12	42	2015-02-03 23:25:00
13	43	2015-02-10 23:25:00
13	44	2015-02-17 23:25:00
13	45	2015-02-24 23:25:00
13	46	2015-03-03 23:25:00
14	47	2015-03-10 23:25:00
14	48	2015-03-17 23:25:00
14	49	2015-03-24 23:25:00
14	50	2015-03-31 23:25:00

Appendix B - Target Exposure History

Start	End	Duration	Target
04/04/2004 22:58	04/04/2004 23:04	0 days, 00:06:31	32
27/03/2005 00:35	27/03/2005 00:38	0 days, 00:02:58	32
19/04/2005 13:03	19/04/2005 13:06	0 days, 00:02:58	32
05/10/2005 00:42	05/10/2005 00:44	0 days, 00:01:57	32
04/03/2006 19:00	04/03/2006 19:03	0 days, 00:02:58	32
08/03/2006 18:00	08/03/2006 18:03	0 days, 00:02:58	32
26/08/2006 18:00	26/08/2006 18:03	0 days, 00:02:57	32
30/08/2006 17:00	30/08/2006 17:03	0 days, 00:02:57	32
23/11/2006 10:00	23/11/2006 10:03	0 days, 00:02:57	32
19/05/2007 14:00	19/05/2007 14:03	0 days, 00:02:58	33
23/05/2007 13:00	23/05/2007 13:03	0 days, 00:02:58	32
16/09/2007 13:00	16/09/2007 13:03	0 days, 00:02:58	32

04/10/2007 19:02	04/10/2007 19:07	0 days, 00:04:58	33
05/01/2008 12:34	05/01/2008 12:37	0 days, 00:02:57	1
09/01/2008 14:34	09/01/2008 14:37	0 days, 00:02:55	1
05/07/2008 04:15	05/07/2008 04:18	0 days, 00:02:59	32
29/01/2009 09:51	29/01/2009 09:54	0 days, 00:02:58	2
02/02/2009 15:51	02/02/2009 15:54	0 days, 00:02:58	32
20/09/2009 17:45	20/09/2009 17:47	0 days, 00:02:00	32
24/04/2010 21:15	24/04/2010 21:17	0 days, 00:02:00	34
10/07/2010 11:09	10/07/2010 22:51	0 days, 11:41:58	36
03/12/2010 23:00	03/12/2010 23:02	0 days, 00:01:58	4
07/12/2010 00:30	07/12/2010 00:32	0 days, 00:01:58	32
07/12/2010 02:25	05/03/2011 01:02	87 days, 22:36:58	32
05/03/2011 02:55	03/09/2014 21:58	1278 days, 19:02:57	32
17/09/2014 12:27	21/09/2014 12:15	3 days, 23:48:00	10

28/09/2014 00:06	29/09/2014 10:35	1 days, 10:29:02	10
30/09/2014 12:16	01/10/2014 13:17	1 days, 01:01:01	10
03/10/2014 10:12	05/10/2014 12:15	2 days, 02:03:01	10
08/10/2014 07:01	12/10/2014 12:15	4 days, 05:14:00	10
15/10/2014 10:47	19/10/2014 12:15	4 days, 01:28:00	10
22/10/2014 12:27	28/10/2014 22:35	6 days, 10:07:59	10
09/11/2014 05:02	14/11/2014 09:15	5 days, 04:12:58	10
25/11/2014 11:18	25/11/2014 14:05	0 days, 02:47:10	10
02/12/2014 16:45	10/12/2014 04:13	7 days, 11:27:39	12
13/12/2014 04:27	20/12/2014 04:13	6 days, 23:45:59	12
03/01/2015 16:27	10/01/2015 04:15	6 days, 11:47:59	12
16/01/2015 11:03	18/01/2015 04:15	1 days, 17:12:07	12
21/01/2015 04:27	24/01/2015 04:13	2 days, 23:45:59	12
28/01/2015 04:27	02/02/2015 04:15	4 days, 23:47:57	12

06/02/2015 15:19	07/02/2015 05:55	0 days, 14:36:15	12
11/02/2015 02:47	15/02/2015 00:16	3 days, 21:28:58	11
22/02/2015 04:07	24/02/2015 04:08	2 days, 00:00:59	14
15/03/2015 00:12	17/03/2015 06:13	2 days, 06:01:00	14
19/03/2015 10:36	21/03/2015 10:35	1 days, 23:59:08	13
24/03/2015 23:32	25/03/2015 02:35	0 days, 03:02:58	13
27/03/2015 23:24	11/04/2015 02:35	14 days, 03:10:55	11
14/04/2015 11:09	15/04/2015 02:35	0 days, 15:25:56	13
21/04/2015 23:24	22/04/2015 02:35	0 days, 03:10:56	13
24/04/2015 23:24	25/04/2015 02:35	0 days, 03:10:55	13
27/04/2015 23:24	28/04/2015 02:35	0 days, 03:10:56	13
28/04/2015 23:24	29/04/2015 02:35	0 days, 03:10:56	13
01/05/2015 23:24	03/05/2015 23:15	1 days, 23:50:56	13
05/05/2015 23:24	06/05/2015 05:55	0 days, 06:30:56	13

08/05/2015 23:24	09/05/2015 05:55	0 days, 06:30:56	13
12/05/2015 23:24	13/05/2015 05:55	0 days, 06:30:54	13
15/05/2015 23:06	16/05/2015 05:55	0 days, 06:48:54	13
19/05/2015 23:24	20/05/2015 05:55	0 days, 06:30:55	13
22/05/2015 12:25	23/05/2015 05:55	0 days, 17:29:53	13
25/05/2015 23:38	27/05/2015 17:55	1 days, 18:16:55	13
29/05/2015 06:34	01/06/2015 16:55	3 days, 10:20:59	13
02/06/2015 23:24	03/06/2015 05:55	0 days, 06:30:53	13
05/06/2015 23:24	06/06/2015 05:55	0 days, 06:30:55	13
08/06/2015 16:23	10/06/2015 05:55	1 days, 13:31:54	13
10/06/2015 07:41	13/06/2015 05:55	2 days, 22:14:02	13
15/06/2015 15:12	17/06/2015 05:55	1 days, 14:42:54	13
19/06/2015 23:24	20/06/2015 05:55	0 days, 06:30:54	13
22/06/2015 23:24	24/06/2015 05:55	1 days, 06:30:54	13

26/06/2015 23:24	27/06/2015 05:55	0 days, 06:30:54	13
30/06/2015 23:24	01/07/2015 03:55	0 days, 04:30:49	13
03/07/2015 23:34	04/07/2015 05:55	0 days, 06:20:52	13
07/07/2015 00:09	07/07/2015 23:25	0 days, 23:15:52	13
11/07/2015 16:21	15/07/2015 03:55	3 days, 11:34:14	13
17/07/2015 17:50	18/07/2015 05:55	0 days, 12:05:01	13
21/07/2015 22:59	22/07/2015 03:55	0 days, 04:55:52	13
24/07/2015 19:26	25/07/2015 05:55	0 days, 10:28:54	13
28/07/2015 15:51	29/07/2015 05:55	0 days, 14:03:54	13
31/07/2015 23:39	01/08/2015 05:55	0 days, 06:15:54	13
04/08/2015 20:35	05/08/2015 03:25	0 days, 06:49:52	13
07/08/2015 20:36	08/08/2015 05:55	0 days, 09:18:53	13
09/08/2015 13:20	02/09/2015 05:55	23 days, 16:34:55	21
04/09/2015 20:38	05/09/2015 05:55	0 days, 09:16:55	21

06/09/2015 13:20	23/09/2015 05:55	16 days, 16:34:54	22
25/09/2015 15:28	26/09/2015 05:55	0 days, 14:26:53	13
28/09/2015 00:00	03/10/2015 05:40	5 days, 05:39:50	6
06/10/2015 23:24	07/10/2015 05:55	0 days, 06:30:52	13
09/10/2015 23:21	10/10/2015 05:55	0 days, 06:33:53	13
13/10/2015 23:17	14/10/2015 05:55	0 days, 06:37:53	13
16/10/2015 18:18	17/10/2015 05:48	0 days, 11:29:52	13
20/10/2015 23:24	21/10/2015 05:55	0 days, 06:30:52	13
23/10/2015 22:05	24/10/2015 05:55	0 days, 07:49:53	13
27/10/2015 13:47	28/10/2015 05:55	0 days, 16:08:23	13
30/10/2015 23:08	31/10/2015 05:55	0 days, 06:46:21	13
03/11/2015 22:53	04/11/2015 05:55	0 days, 07:01:53	13
06/11/2015 23:30	07/11/2015 05:55	0 days, 06:25:14	13
10/11/2015 23:24	11/11/2015 05:42	0 days, 06:17:45	13

13/11/2015 23:29	14/11/2015 05:55	0 days, 06:26:02	13
17/11/2015 23:19	18/11/2015 05:56	0 days, 06:36:47	13
20/11/2015 23:34	21/11/2015 05:55	0 days, 06:21:00	13
24/11/2015 03:19	25/11/2015 05:56	1 days, 02:36:46	13
27/11/2015 20:18	28/11/2015 05:55	0 days, 09:37:01	13
01/12/2015 18:50	02/12/2015 05:56	0 days, 11:05:47	13
04/12/2015 20:14	05/12/2015 05:55	0 days, 09:41:03	13
07/12/2015 06:02	07/12/2015 11:13	0 days, 05:10:51	13
08/12/2015 20:46	09/12/2015 05:56	0 days, 09:09:47	13
11/12/2015 21:33	12/12/2015 05:55	0 days, 08:22:03	13
15/12/2015 16:15	16/12/2015 05:56	0 days, 13:40:47	13
18/12/2015 07:30	19/12/2015 05:55	0 days, 22:25:03	13
22/12/2015 23:04	23/12/2015 05:56	0 days, 06:51:46	13
25/12/2015 19:55	26/12/2015 05:58	0 days, 10:02:53	13

29/12/2015 20:18	30/12/2015 05:56	0 days, 09:37:55	13
01/01/2016 21:04	02/01/2016 05:55	0 days, 08:51:02	13
05/01/2016 18:45	06/01/2016 05:56	0 days, 11:10:46	13
08/01/2016 09:48	09/01/2016 05:55	0 days, 20:07:03	13
12/01/2016 17:05	13/01/2016 05:56	0 days, 12:50:46	13
15/01/2016 22:45	16/01/2016 05:55	0 days, 07:10:03	13
19/01/2016 19:30	20/01/2016 05:56	0 days, 10:25:45	13
22/01/2016 12:51	27/01/2016 05:56	4 days, 17:04:45	13
29/01/2016 23:24	30/01/2016 05:55	0 days, 06:31:03	13
02/02/2016 20:27	03/02/2016 05:56	0 days, 09:28:46	13
05/02/2016 19:16	06/02/2016 05:55	0 days, 10:39:03	13
09/02/2016 23:20	10/02/2016 12:00	0 days, 12:39:51	13
12/02/2016 23:31	13/02/2016 05:55	0 days, 06:23:54	13
16/02/2016 23:25	20/02/2016 05:55	3 days, 06:29:54	13

21/02/2016 08:07	22/02/2016 21:08	1 days, 13:00:54	13
23/02/2016 23:19	24/02/2016 04:55	0 days, 05:35:35	13
03/03/2016 11:18	05/03/2016 07:23	1 days, 20:05:14	11
08/03/2016 10:50	09/03/2016 05:57	0 days, 19:06:33	11
11/03/2016 23:25	12/03/2016 05:53	0 days, 06:28:29	11
15/03/2016 23:09	16/03/2016 05:57	0 days, 06:47:17	11
16/03/2016 21:47	19/03/2016 05:55	2 days, 08:08:18	11
22/03/2016 23:15	23/03/2016 05:57	0 days, 06:41:46	11
25/03/2016 12:04	02/04/2016 17:55	8 days, 05:51:05	6
08/04/2016 19:13	09/04/2016 05:55	0 days, 10:42:02	11
11/04/2016 10:47	11/04/2016 15:55	0 days, 05:07:56	11
12/04/2016 18:51	13/04/2016 05:56	0 days, 11:04:47	11
16/04/2016 23:25	17/04/2016 05:55	0 days, 06:30:02	11
19/04/2016 23:24	20/04/2016 05:56	0 days, 06:31:46	11

23/04/2016 23:24	24/04/2016 05:55	0 days, 06:30:55	11
26/04/2016 23:24	27/04/2016 05:56	0 days, 06:31:48	11
30/04/2016 23:25	01/05/2016 05:55	0 days, 06:30:03	11
03/05/2016 23:24	04/05/2016 05:56	0 days, 06:31:48	11
07/05/2016 23:20	08/05/2016 05:55	0 days, 06:35:03	11
10/05/2016 23:08	11/05/2016 05:56	0 days, 06:47:46	11
14/05/2016 23:22	15/05/2016 05:55	0 days, 06:32:22	11
18/05/2016 11:23	18/05/2016 15:56	0 days, 04:32:45	11
21/05/2016 23:39	22/05/2016 05:55	0 days, 06:15:51	11
24/05/2016 23:07	25/05/2016 05:56	0 days, 06:48:46	11
04/06/2016 23:24	05/06/2016 05:55	0 days, 06:31:02	11
07/06/2016 23:18	08/06/2016 05:56	0 days, 06:37:46	11
11/06/2016 23:21	12/06/2016 05:55	0 days, 06:34:02	11
14/06/2016 05:59	15/06/2016 05:56	0 days, 23:56:49	11

18/06/2016 23:22	19/06/2016 05:55	0 days, 06:32:43	11
21/06/2016 23:11	22/06/2016 05:56	0 days, 06:44:48	11
25/06/2016 23:27	26/06/2016 05:55	0 days, 06:27:56	11
28/06/2016 23:24	29/06/2016 05:56	0 days, 06:31:47	11
02/07/2016 23:30	03/07/2016 05:55	0 days, 06:24:41	11
05/07/2016 23:19	06/07/2016 05:56	0 days, 06:36:26	11
09/07/2016 23:41	10/07/2016 05:55	0 days, 06:14:02	11
12/07/2016 23:24	13/07/2016 05:56	0 days, 06:31:46	11
16/07/2016 23:20	17/07/2016 05:55	0 days, 06:35:04	11
19/07/2016 23:24	20/07/2016 05:56	0 days, 06:31:46	11
23/07/2016 23:20	24/07/2016 05:55	0 days, 06:34:42	11
26/07/2016 23:23	27/07/2016 05:56	0 days, 06:33:06	11
30/07/2016 23:24	31/07/2016 05:55	0 days, 06:30:30	11
02/08/2016 23:24	03/08/2016 05:56	0 days, 06:31:48	11

06/08/2016 23:44	07/08/2016 05:55	0 days, 06:10:24	11
09/08/2016 23:24	09/08/2016 23:25	0 days, 00:00:56	11
10/08/2016 06:38	10/08/2016 11:19	0 days, 04:40:48	11
12/08/2016 06:39	12/08/2016 11:00	0 days, 04:20:56	11
13/08/2016 06:39	13/08/2016 11:06	0 days, 04:27:25	11
15/08/2016 06:39	15/08/2016 06:40	0 days, 00:00:55	11

Appendix C - Glossary

Acronym	Definition
AFM	Atomic Force Microscope
CSSC	
DAC	Digital to Analogue Converter
DPU	Data Processing Unit
FM	Flight Model
FS	Flight Spare
HK	Housekeeping
HV	High Voltage
ITL	Instrument Timeline
LVDT	Linear Variable Differential Transformer
MIDAS	Micro Imaging Dust Analysis System
MTP	Medium Term Planning
OCM	Orbital Correction Manoeuvre
PDS	Planetary Data System
PSA	Planetary Science Archive
SEM	Scanning Electron Microscope
STP	Short Term Planning

STP 003

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-05-12 16:58:31	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_001_ZS	2/6	DYN	X	-91.084/7.323 13.132/15.594	51.296/ 60.912	XY calibration, main scan X: FAIL
2	2014-05-13 03:09:07	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_002_ZS	2/6	DYN	Y	-93.22/7.323 15.586/14.645	60.885/ 57.208	XY calibration, main scan Y: PASS
3	2014-05-13 21:08:04	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_003_ZS	8/7	DYN	X	-107.978/22.517 46.686/52.15	162.105/ 181.078	Coarse pre-scan facet 8: FAIL
4	2014-05-14 11:11:37	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_004_ZS	8/7	DYN	X	-88.482/1.953 3.309/4.03	25.848/ 31.481	Fine pre-scan facet 8: PASS
5	2014-05-14 16:48:51	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_005_ZS	9/7	DYN	X	-104.24/22.517 46.686/52.15	162.105/ 181.078	Coarse pre-scan facet 9: PASS
6	2014-05-15 06:59:14	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_006_ZS	9/7	DYN	X	-84.744/1.953 3.309/4.03	25.848/ 31.481	Fine pre-scan facet 9: PASS
7	2014-05-15 16:45:08	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_007_ZS	10/7	DYN	X	-109.58/22.517 46.686/52.15	162.105/ 181.078	Coarse pre-scan facet 10: PASS
8	2014-05-16 06:55:10	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_008_ZS	10/7	DYN	X	-86.346/1.953 3.309/4.03	25.848/ 31.481	Fine pre-scan facet 10: PASS
9	2014-05-16 15:11:04	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_009_ZS	11/7	DYN	X	-104.24/22.517 46.686/52.15	162.105/ 181.078	Coarse pre-scan facet 11: FAIL
10	2014-05-17 06:51:03	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_010_ZS	11/7	DYN	X	-91.152/1.953 3.309/4.03	25.848/ 31.481	Fine pre-scan facet 11: PASS
11	2014-05-17 16:36:45	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_011_ZS	12/7	DYN	X	-105.842/22.517 46.686/52.15	162.105/ 181.078	Coarse pre-scan facet 12: PASS
12	2014-05-18 06:47:00	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_012_ZS	12/7	DYN	X	-90.084/1.953 3.309/4.03	25.848/ 31.481	Fine pre-scan facet 12: PASS

13	2014-05-18 20:32:26	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_013_ZS	4/7	DYN	X	-106.376/22.517 46.686/52.15	162.105/ 181.078	Coarse pre-scan of silicon target (facet 4): started OK, but Z piezo saturation: FAIL
14	2014-05-19 15:40:45	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_014_ZS	32/7	DYN	X	-102.242/20.137 33.019/46.05	206.37/ 239.845	Repeat of DSH target scan (facet 32): PASS

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-05-23 16:16:28	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_015_ZS	1/7	DYN	X	-89.809/4.272 8.535/8.936	33.34/ 39.894	Z calibration scans, 256x224 pixels: FAIL
2	2014-05-25 16:38:04	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_016_ZS	13/7	DYN	X	-110.114/22.517 46.686/52.15	162.105/ 181.078	Coarse pre-scan facet 13: FAIL
3	2014-05-26 07:03:21	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_018_ZS	13/7	DYN	X	-89.901/3.905 6.758/8.153	26.397/ 31.847	Fine pre-scan facet 13: PASS
4	2014-05-26 15:58:36	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_020_ZS	14/7	DYN	X	-109.046/22.517 46.686/52.15	162.105/ 181.078	Coarse pre-scan facet 14: PASS
5	2014-05-27 06:30:10	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_022_ZS	14/7	DYN	X	-89.367/3.905 6.758/8.153	26.397/ 31.847	Fine pre-scan facet 14: PASS
6	2014-05-27 15:54:06	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_024_ZS	15/7	DYN	X	-109.046/22.517 46.686/52.15	162.105/ 181.078	Coarse pre-scan facet 15: PASS
7	2014-05-28 06:19:46	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1413214_1415411_026_ZS	15/7	DYN	X	-90.481/3.417 5.882/7.113	26.26/ 31.755	Fine pre-scan facet 15: PASS

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-06-10 14:57:27	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_001_ZS	16/7	DYN	X	-107.444/22.517 46.686/52.15	162.105/ 181.078	coarse pre-scan, FAIL - motor stuck
2	2014-06-11 06:48:00	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_003_ZS	16/7	DYN	X	-87.948/1.953 3.309/4.03	25.848/ 31.481	fine pre-scan, PASS
3	2014-06-11 14:45:55	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_005_ZS	16/6	DYN	X	-107.346/22.517 46.686/52.15	162.105/ 181.078	coarse pre-scan, PASS
4	2014-06-12 06:43:20	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_007_ZS	16/6	DYN	X	-88.918/1.953 3.309/4.03	25.848/ 31.481	fine pre-scan (cant #6, test for switch), PASS
5	2014-06-12 14:58:23	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_009_ZS	5/7	DYN	X	-101.602/15.072 29.183/33.531	70.151/ 80.603	silicon pre-scan, PASS
6	2014-06-13 13:55:22	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_011_ZS	2/7	DYN	X	-94.92/6.407 13.132/13.572	51.296/ 60.591	XY cal main scan X, PASS
7	2014-06-13 23:58:21	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_012_ZS	2/7	DYN	Y	-88.511/6.407 15.586/12.815	60.885/ 57.208	XY cal main scan X, PASS
8	2014-06-14 14:31:53	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_013_ZS	17/7	DYN	X	-109.58/22.517 46.686/52.15	162.105/ 181.078	coarse pre-scan, PASS
9	2014-06-15 06:29:21	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_015_ZS	17/7	DYN	X	-87.414/1.953 3.309/4.03	25.848/ 31.481	fine pre-scan, PASS
10	2014-06-15 14:27:26	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_017_ZS	18/7	DYN	X	-106.376/22.517 46.686/52.15	162.105/ 181.078	coarse pre-scan, PASS
11	2014-06-16 06:24:40	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_019_ZS	18/7	DYN	X	-87.948/1.953 3.309/4.03	25.848/ 31.481	fine pre-scan, PASS
12	2014-06-16 14:22:56	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_021_ZS	19/7	DYN	X	-107.978/22.517 46.686/52.15	162.105/ 181.078	coarse pre-scan, PASS
13	2014-06-17 06:20:01	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_023_ZS	19/7	DYN	X	-88.482/1.953 3.309/4.03	25.848/ 31.481	fine pre-scan, PASS

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-06-20 12:53:04	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_025_ZS	2/7	DYN	X	-92.784/7.323 13.132/15.594	51.296/ 60.912	PASS
2	2014-06-21 13:54:02	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_026_ZS	11/7	DYN	X	-109.046/22.517 46.686/52.15	162.105/ 181.078	FAIL
3	2014-06-22 04:51:37	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_028_ZS	11/7	DYN	X	-89.016/1.953 3.309/4.03	25.848/ 31.481	fine scan, PASS
4	2014-06-22 13:24:47	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_030_ZS	13/7	DYN	X	-107.978/22.517 46.686/52.15	162.105/ 181.078	coarse scan, PASS
5	2014-06-23 04:38:48	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_032_ZS	13/7	DYN	X	-87.414/1.953 3.309/4.03	25.848/ 31.481	fine scan, PASS
6	2014-06-23 13:12:17	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_034_ZS	4/7	DYN	X	-109.58/22.517 46.686/52.15	162.105/ 181.078	coarse prescan scan, PASS but odd steps in image
7	2014-06-24 04:33:55	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_036_ZS	4/7	DYN	X	-87.948/1.953 3.309/4.03	25.848/ 31.481	fine scan, PASS, odd imaging
8	2014-06-24 13:07:15	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_038_ZS	20/7	DYN	X	-109.046/22.517 46.686/52.15	162.105/ 181.078	coarse scan, PASS
9	2014-06-25 04:28:59	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_040_ZS	20/7	DYN	X	-87.948/1.953 3.309/4.03	25.848/ 31.481	fine scan, PASS
10	2014-06-25 13:02:50	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_042_ZS	21/7	DYN	X	-107.978/22.517 46.686/52.15	162.105/ 181.078	coarse scan PASS
11	2014-06-26 04:24:04	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_044_ZS	21/7	DYN	X	-87.948/1.953 3.309/4.03	25.848/ 31.481	fine scan, PASS
12	2014-06-26 12:57:39	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_046_ZS	22/7	DYN	X	-107.978/22.517 46.686/52.15	162.105/ 181.078	coarse scan, PASS
13	2014-06-27 04:19:09	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_048_ZS	22/7	DYN	X	-87.414/1.953 3.309/4.03	25.848/ 31.481	fine scan, PASS
14	2014-06-27 12:52:59	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_050_ZS	23/7	DYN	X	-108.512/22.517 46.686/52.15	162.105/ 181.078	coarse scan, PASS

15	2014-06-28 04:14:15	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_052_ZS	23/7	DYN	X	-89.016/1.953 3.309/4.03	25.848/ 31.481	fine scan, PASS
16	2014-06-28 12:48:58	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_054_ZS	24/7	DYN	X	-109.046/22.517 46.686/52.15	162.105/ 181.078	coarse scan, PASS
17	2014-06-29 04:09:20	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_056_ZS	24/7	DYN	X	-87.948/1.953 3.309/4.03	25.848/ 31.481	fine scan, PASS
18	2014-06-29 12:08:23	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_058_ZS	2/6	DYN	X	-92.686/7.323 13.132/15.594	51.296/ 60.912	PASS
19	2014-06-29 22:48:28	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1415703_1418209_059_ZS	2/6	DYN	X	-95.356/7.323 13.132/15.594	51.296/ 60.912	PASS

STP 007

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-07-05 21:35:49	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_001_ZS	1/7	DYN	X	-89.275/4.882 8.535/10.249	33.34/ 40.037	Z calibration, PASS, repeat STP004-1
2	2014-07-06 11:48:37	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_002_ZS	8/7	DYN	X	-107.078/20.015 40.576/45.741	158.5/ 178.676	coarse scan, PASS
3	2014-07-07 00:45:16	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_004_ZS	8/7	DYN	X	-87.994/1.465 2.468/3.013	6.428/ 7.847	fine scan, PASS
4	2014-07-07 12:03:22	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_006_ZS	9/7	DYN	X	-104.774/22.517 46.686/52.15	162.105/ 181.078	coarse scan, PASS
5	2014-07-08 03:38:35	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_008_ZS	9/7	DYN	X	-89.55/1.953 3.309/4.03	12.924/ 15.74	fine scan, PASS

STP 008

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-07-11 11:44:13	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_010_ZS	16/7	DYN	X	-107.978/22.517 46.686/52.15	162.105/ 181.078	FAIL - Z piezo saturation?
2	2014-07-12 03:04:40	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_012_ZS	16/7	DYN	X	-89.016/1.953 3.309/4.03	25.848/ 31.481	Repeat STP005-2
3	2014-07-12 11:36:24	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_014_ZS	8/7	DYN	X	-111.548/20.015 53.027/45.741	165.71/ 178.676	320x256 scan @centre of wheel - offset 0um, PASS
4	2014-07-13 04:09:20	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_016_ZS	8/7	DYN	X	-155.876/20.015 53.027/45.741	165.71/ 178.676	320x256 scan @centre of wheel - offset -45um, PASS
5	2014-07-13 20:42:35	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_018_ZS	8/7	DYN	X	-64.55/20.015 53.027/45.741	165.71/ 178.676	320x256 scan @centre of wheel - offset +45um, PASS
6	2014-07-14 13:04:33	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_020_ZS	8/7	DYN	X	-19.689/17.513 53.027/39.486	165.71/ 176.275	320x256 scan @centre of wheel - offset +90um, PASS

STP 009

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-07-18 11:09:32	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_022_ZS	4/7	DYN	X	-107.978/22.517 46.686/52.15	162.105/ 181.078	Repeat STP006-6, FAIL - piezo saturation?
2	2014-07-19 02:36:16	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_024_ZS	4/7	DYN	X	-89.901/1.953 6.758/4.03	26.397/ 31.481	FAIL
3	2014-07-19 11:01:51	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_026_ZS	9/7	DYN	X	-200.203/20.015 53.027/45.741	165.71/ 178.676	320x256 scan@centre of wheel - offset - 90um, PASS
4	2014-07-20 03:35:08	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_028_ZS	9/7	DYN	X	-155.341/20.015 53.027/45.741	165.71/ 178.676	320x256 scan@centre of wheel - offset - 45um, PASS
5	2014-07-20 19:57:10	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_030_ZS	9/7	DYN	X	-110.48/17.513 53.027/39.486	165.71/ 176.275	320x224 scan@centre of wheel - offset 0um, PASS
6	2014-07-21 10:44:20	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_032_ZS	9/7	DYN	X	-65.084/20.015 53.027/45.741	165.71/ 178.676	320x256 scan@centre of wheel - offset +45um, PASS

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-07-25 12:15:16	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_034_ZS	15/7	DYN	X	-87.414/1.953 3.309/4.03	6.462/ 7.87	
2	2014-07-25 23:33:10	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_036_ZS	15/7	DYN	X	-86.911/0.915 1.533/1.877	3.195/ 3.911	fine scan, PASS
3	2014-07-26 10:27:25	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_038_ZS	2/6	DYN	X	-92.152/7.323 13.132/15.594	51.296/ 60.912	XY calibration, PASS
4	2014-07-26 20:54:01	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_039_ZS	1/6	DYN	X	-88.643/4.882 8.535/10.249	33.34/ 40.037	Z calibration, PASS
5	2014-07-27 05:17:37	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_040_ZS	2/6	DYN	X	-95.89/7.323 13.132/15.594	51.296/ 60.912	
6	2014-07-27 16:28:45	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_041_ZS	6/7	DYN	X	-200.203/20.015 53.027/45.741	165.71/ 178.676	coarse scan 320x256 scan@offset -90um, PASS
7	2014-07-28 11:57:22	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_043_ZS	6/7	DYN	X	-154.807/20.015 53.027/45.741	165.71/ 178.676	coarse scan 320x256 scan@offset -45um, PASS
8	2014-07-29 03:28:06	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_045_ZS	6/7	DYN	X	-134.762/3.905 6.758/8.153	26.397/ 31.847	fine scan (256x256@8)@offset -45um, PASS
9	2014-07-29 12:06:39	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_047_ZS	6/7	DYN	X	-109.946/20.015 53.027/45.741	165.71/ 178.676	coarse scan 320x256 scan@offset 0um, PASS
10	2014-07-30 03:37:17	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_049_ZS	6/7	DYN	X	-88.298/3.905 6.758/8.153	26.397/ 31.847	fine scan (256x256@8)@offset 0um, PASS
11	2014-07-30 09:49:33	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_051_ZS	6/7	DYN	X	-64.55/20.015 53.027/45.741	165.71/ 178.676	coarse scan 320x256 scan@offset +45um, PASS
12	2014-07-31 01:20:05	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_053_ZS	6/7	DYN	X	-45.039/3.905 6.758/8.153	26.397/ 31.847	fine scan (256x256@8)@offset +45um, PASS

13	2014-07-31 07:32:27	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_055_ZS	6/7	DYN	X	-20.757/20.015 53.027/45.741	165.71/ 178.676	coarse scan 320x256 scan@offset +90um, PASS
14	2014-07-31 23:48:42	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1418502_1421310_057_ZS	6/7	DYN	X	1.135/3.661 6.319/7.632	13.164/ 15.9	fine scan (480x480@4)@offset +90um, PASS

STP 011

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-08-01 13:29:19	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_001_ZS	10/7	DYN	X	-240.717/20.137 40.869/46.05	212.858/ 239.845	
2	2014-08-02 00:29:09	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_004_ZS	10/7	DYN	X	-195.321/20.137 40.869/46.05	212.858/ 239.845	
3	2014-08-02 12:29:12	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_006_ZS	10/7	DYN	X	-149.926/20.137 40.869/46.05	212.858/ 239.845	
4	2014-08-02 23:04:28	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_008_ZS	10/7	DYN	X	-133.744/3.955 3.732/4.54	19.438/ 23.645	
5	2014-08-03 01:17:16	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_010_ZS	10/7	DYN	X	-130.227/3.955 3.732/4.54	19.438/ 23.645	
6	2014-08-03 03:29:55	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_012_ZS	10/7	DYN	X	-133.744/0.439 3.732/4.54	19.438/ 23.645	
7	2014-08-03 05:42:08	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_014_ZS	10/7	DYN	X	-130.227/0.439 3.732/4.54	19.438/ 23.645	
8	2014-08-03 12:29:26	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_016_ZS	10/7	DYN	X	-104.53/20.137 40.869/46.05	212.858/ 239.845	
9	2014-08-04 00:29:34	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_018_ZS	10/7	DYN	X	-59.135/20.137 40.869/46.05	212.858/ 239.845	
10	2014-08-04 12:29:45	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_020_ZS	10/7	DYN	X	-15.875/20.137 40.869/46.05	212.858/ 239.845	
11	2014-08-05 00:29:46	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_022_ZS	10/7	DYN	X	30.589/20.137 40.869/46.05	212.858/ 239.845	

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-08-05 13:28:51	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_024_ZS	11/7	DYN	X	-225.763/20.137 40.869/46.05	212.858/ 239.845	
2	2014-08-06 00:20:30	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_026_ZS	11/7	DYN	X	-195.321/16.781 40.869/37.684	212.858/ 235.524	
3	2014-08-06 13:58:58	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_028_ZS	11/7	DYN	X	-164.88/20.137 40.869/46.05	212.858/ 239.845	
4	2014-08-07 00:29:07	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_030_ZS	11/7	DYN	X	-134.972/20.137 40.869/46.05	212.858/ 239.845	
5	2014-08-07 08:51:14	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_032_ZS	11/7	DYN	X	-116.787/1.953 3.309/4.03	25.848/ 31.481	
6	2014-08-07 12:29:09	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_034_ZS	11/7	DYN	X	-105.598/20.137 40.869/46.05	212.858/ 239.845	
7	2014-08-07 20:51:16	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_036_ZS	11/7	DYN	X	-87.414/1.953 3.309/4.03	25.848/ 31.481	
8	2014-08-08 00:37:38	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_038_ZS	11/7	DYN	X	-75.691/23.493 40.869/54.693	212.858/ 244.166	
9	2014-08-08 10:21:01	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_040_ZS	11/7	DYN	X	-57.506/1.953 3.309/4.03	25.848/ 31.481	
10	2014-08-08 13:29:10	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_042_ZS	11/7	DYN	X	-45.249/20.137 40.869/46.05	212.858/ 239.845	
11	2014-08-09 00:29:13	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_044_ZS	11/7	DYN	X	-15.875/20.137 40.869/46.05	212.858/ 239.845	
12	2014-08-09 08:50:59	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_046_ZS	11/7	DYN	X	2.309/1.953 3.309/4.03	25.848/ 31.481	
13	2014-08-09 12:29:16	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_048_ZS	11/7	DYN	X	14.567/20.137 40.869/46.05	212.858/ 239.845	
14	2014-08-09 20:50:51	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_050_ZS	11/7	DYN	X	32.751/1.953 3.309/4.03	25.848/ 31.481	
15	2014-08-10 00:00:08	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_052_ZS	11/7	DYN	X	-89.733/2.441 4.158/5.052	16.241/ 19.733	

16	2014-08-10 03:32:04	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_054_ZS	11/7	DYN	X	-86.071/2.441 4.158/5.052	16.241/ 19.733	
17	2014-08-10 12:24:13	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_056_ZS	2/7	DYN	X	-92.784/7.323 13.132/15.594	51.296/ 60.912	
18	2014-08-11 00:35:47	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_060_ZS	2/7	DYN	X	-92.784/7.467 13.132/14.933	51.296/ 58.333	
19	2014-08-11 12:36:12	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_064_ZS	2/7	DYN	Y	-92.784/7.467 15.586/14.933	60.885/ 58.333	
20	2014-08-12 00:37:53	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_068_ZS	5/7	DYN	X	-92.845/7.578 13.25/15.156	37.641/ 43.056	

STP 013

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-08-12 16:38:52	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_074_ZS	2/7	DYN	X	-92.784/0.0 13.132/0.0	51.296/ 0.0	failed due to thermal/switch ON issues following patch
2	2014-08-12 18:04:59	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_078_ZS	2/7	DYN	Y	-85.461/7.323 0.0/14.645	0.0/ 57.208	
3	2014-08-12 19:28:08	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_082_ZS	2/7	DYN	X	-92.784/44.744 13.132/0.0	51.296/ 0.0	
4	2014-08-12 20:47:28	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_086_ZS	2/7	DYN	Y	-85.461/64.759 0.0/40.03	0.0/ 156.367	
5	2014-08-13 00:20:20	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_090_ZS	5/7	DYN	X	74.916/16.781 40.869/37.684	212.858/ 235.524	
6	2014-08-13 12:18:42	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_092_ZS	5/7	DYN	X	-285.044/20.137 40.869/46.05	212.858/ 239.845	
7	2014-08-13 20:40:54	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_094_ZS	5/7	DYN	X	-266.86/1.953 3.309/4.03	25.848/ 31.481	
8	2014-08-14 00:28:45	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_096_ZS	5/7	DYN	X	-255.671/20.137 40.869/46.05	212.858/ 239.845	
9	2014-08-14 08:50:55	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_098_ZS	5/7	DYN	X	-237.486/1.953 3.309/4.03	25.848/ 31.481	
10	2014-08-14 12:28:45	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_100_ZS	5/7	DYN	X	-225.763/20.137 40.869/46.05	212.858/ 239.845	
11	2014-08-14 20:50:55	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_102_ZS	5/7	DYN	X	-207.579/1.953 3.309/4.03	25.848/ 31.481	
12	2014-08-15 00:28:46	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_104_ZS	5/7	DYN	X	-195.321/20.137 40.869/46.05	212.858/ 239.845	
13	2014-08-15 08:57:28	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_106_ZS	5/7	DYN	X	-179.09/1.953 6.758/4.03	26.397/ 31.481	
14	2014-08-15 13:28:43	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_108_ZS	5/7	DYN	X	-165.414/20.137 40.869/46.05	212.858/ 239.845	

15	2014-08-16 00:28:42	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_110_ZS	5/7	DYN	X	-134.972/20.137 40.869/46.05	212.858/ 239.845	
16	2014-08-16 08:51:22	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_112_ZS	5/7	DYN	X	-116.787/1.953 3.309/4.03	25.848/ 31.481	
17	2014-08-16 12:33:48	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_114_ZS	5/7	DYN	X	-105.598/20.137 40.869/46.05	212.858/ 239.845	
18	2014-08-16 20:50:38	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_116_ZS	5/7	DYN	X	-87.414/1.953 3.309/4.03	25.848/ 31.481	
19	2014-08-17 00:20:07	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_118_ZS	5/7	DYN	X	-75.691/16.781 40.869/37.684	212.858/ 235.524	
20	2014-08-17 12:18:38	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_120_ZS	5/7	DYN	X	-45.249/20.137 40.869/46.05	212.858/ 239.845	
21	2014-08-17 20:40:40	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_122_ZS	5/7	DYN	X	-27.064/1.953 3.309/4.03	25.848/ 31.481	
22	2014-08-18 00:28:41	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_124_ZS	5/7	DYN	X	-15.341/20.137 40.869/46.05	212.858/ 239.845	
23	2014-08-18 08:50:54	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_126_ZS	5/7	DYN	X	2.843/1.953 3.309/4.03	25.848/ 31.481	
24	2014-08-18 12:28:45	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_128_ZS	5/7	DYN	X	14.567/20.137 40.869/46.05	212.858/ 239.845	
25	2014-08-18 20:51:13	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_130_ZS	5/7	DYN	X	32.751/1.953 3.309/4.03	25.848/ 31.481	
26	2014-08-19 00:29:08	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_132_ZS	5/7	DYN	X	45.542/20.137 40.869/46.05	212.858/ 239.845	
27	2014-08-19 08:51:17	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_134_ZS	5/7	DYN	X	63.727/1.953 3.309/4.03	25.848/ 31.481	

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-08-19 13:29:05	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_136_ZS	7/7	DYN	X	-264.75/20.137 40.869/46.05	212.858/ 239.845	Coarse prescan, PASS
2	2014-08-20 00:20:49	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_138_ZS	7/7	DYN	X	-233.24/16.781 40.869/37.684	212.858/ 235.524	Coarse prescan, PASS
3	2014-08-20 12:20:15	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_140_ZS	7/7	DYN	X	-201.73/20.137 40.869/46.05	212.858/ 239.845	Coarse prescan, PASS
4	2014-08-20 20:42:23	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_142_ZS	7/7	DYN	X	-184.034/1.953 4.158/4.03	25.986/ 31.481	Fine prescan, PASS
5	2014-08-21 00:29:07	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_144_ZS	7/7	DYN	X	-169.152/20.137 40.869/46.05	212.858/ 239.845	Coarse prescan, PASS
6	2014-08-21 08:51:00	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_146_ZS	7/7	DYN	X	-150.968/1.953 3.309/4.03	25.848/ 31.481	Fine prescan, PASS
7	2014-08-21 12:29:10	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_148_ZS	7/7	DYN	X	-137.642/20.137 40.869/46.05	212.858/ 239.845	Coarse prescan, PASS
8	2014-08-21 20:51:02	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_150_ZS	7/7	DYN	X	-119.458/1.953 3.309/4.03	25.848/ 31.481	Fine prescan, PASS
9	2014-08-22 00:21:14	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_152_ZS	2/7	DYN	X	-90.8/6.407 11.382/13.572	50.814/ 60.591	XY calibration
10	2014-08-22 08:40:57	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_153_ZS	2/7	DYN	X	-91.334/6.407 11.382/13.572	50.814/ 60.591	XY calibration
11	2014-08-22 16:24:36	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_154_ZS	7/7	DYN	X	-247.1/1.953 3.309/4.03	25.848/ 31.481	Fine prescan, PASS
12	2014-08-22 18:22:37	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_156_ZS	7/7	DYN	X	-215.056/1.953 3.309/4.03	25.848/ 31.481	Fine prescan, PASS
13	2014-08-22 20:20:38	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_158_ZS	7/7	DYN	X	-22.792/1.953 3.309/4.03	25.848/ 31.481	Fine prescan, PASS
14	2014-08-23 00:43:54	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_160_ZS	7/7	DYN	X	-105.064/20.137 40.869/46.05	212.858/ 239.845	Coarse prescan, PASS
15	2014-08-23 09:05:38	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_162_ZS	7/7	DYN	X	-86.88/1.953 3.309/4.03	25.848/ 31.481	Fine prescan, PASS

16	2014-08-23 12:43:49	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_164_ZS	7/7	DYN	X	-73.02/20.137 40.869/46.05	212.858/ 239.845	Coarse prescan, PASS
17	2014-08-23 21:05:37	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_166_ZS	7/7	DYN	X	-54.836/1.953 3.309/4.03	25.848/ 31.481	Fine prescan, PASS
18	2014-08-24 00:35:17	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_168_ZS	7/7	DYN	X	-40.442/16.781 40.869/37.684	212.858/ 235.524	Coarse prescan, PASS
19	2014-08-24 12:18:40	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_170_ZS	7/7	DYN	X	-8.932/20.137 40.869/46.05	212.858/ 239.845	Coarse prescan, PASS
20	2014-08-24 20:42:27	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_172_ZS	7/7	DYN	X	8.764/1.953 4.158/4.03	25.986/ 31.481	Fine prescan, PASS
21	2014-08-25 00:43:47	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_174_ZS	7/7	DYN	X	23.112/20.137 40.869/46.05	212.858/ 239.845	
22	2014-08-25 09:04:23	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_176_ZS	7/7	DYN	X	41.296/1.465 3.309/3.013	25.848/ 31.389	

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-08-25 12:43:51	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_178_ZS	7/7	DYN	X	54.087/20.137 40.869/46.05	212.858/ 239.845	
2	2014-08-25 21:06:11	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_180_ZS	7/7	DYN	X	72.272/1.953 3.309/4.03	25.848/ 31.481	
3	2014-08-26 00:43:58	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_182_ZS	7/7	DYN	X	87.734/20.137 40.869/46.05	212.858/ 239.845	
4	2014-08-26 09:05:54	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_184_ZS	7/7	DYN	X	105.918/1.953 3.309/4.03	25.848/ 31.481	
5	2014-08-26 13:13:50	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_186_ZS	12/7	DYN	X	-297.328/20.137 40.869/46.05	212.858/ 239.845	
6	2014-08-27 00:35:25	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_188_ZS	12/7	DYN	X	-264.216/16.781 40.869/37.684	212.858/ 235.524	
7	2014-08-27 12:18:54	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_190_ZS	12/7	DYN	X	-233.24/20.137 40.869/46.05	212.858/ 239.845	
8	2014-08-27 20:40:38	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_192_ZS	12/7	DYN	X	-215.056/1.953 3.309/4.03	25.848/ 31.481	
9	2014-08-28 00:44:01	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_194_ZS	12/7	DYN	X	-201.73/20.137 40.869/46.05	212.858/ 239.845	
10	2014-08-28 09:05:55	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_196_ZS	12/7	DYN	X	-183.546/1.953 3.309/4.03	25.848/ 31.481	
11	2014-08-28 12:44:01	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_198_ZS	12/7	DYN	X	-168.618/20.137 40.869/46.05	212.858/ 239.845	
12	2014-08-28 21:06:12	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_200_ZS	12/7	DYN	X	-150.434/1.953 3.309/4.03	25.848/ 31.481	
13	2014-08-29 00:44:20	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_202_ZS	12/7	DYN	X	-137.642/20.137 40.869/46.05	212.858/ 239.845	
14	2014-08-29 09:06:15	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_204_ZS	12/7	DYN	X	-119.458/1.953 3.309/4.03	25.848/ 31.481	
15	2014-08-29 13:05:42	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_206_ZS	12/7	DYN	X	-104.53/16.781 40.869/37.684	212.858/ 235.524	

16	2014-08-29 20:12:36	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_208_ZS	12/7	DYN	X	-88.298/1.953 6.758/4.03	26.397/ 31.481	
17	2014-08-30 00:44:28	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_210_ZS	12/7	DYN	X	-73.02/20.137 40.869/46.05	212.858/ 239.845	
18	2014-08-30 09:06:01	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_212_ZS	12/7	DYN	X	-54.836/1.953 3.309/4.03	25.848/ 31.481	
19	2014-08-30 12:44:25	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_214_ZS	12/7	DYN	X	-40.976/20.137 40.869/46.05	212.858/ 239.845	
20	2014-08-30 21:06:00	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_216_ZS	12/7	DYN	X	-22.792/1.953 3.309/4.03	25.848/ 31.481	
21	2014-08-31 00:36:06	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_218_ZS	12/7	DYN	X	-8.932/16.781 40.869/37.684	212.858/ 235.524	
22	2014-08-31 12:19:31	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_220_ZS	12/7	DYN	X	22.578/20.137 40.869/46.05	212.858/ 239.845	
23	2014-08-31 20:42:32	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_222_ZS	12/7	DYN	X	40.274/1.953 4.158/4.03	25.986/ 31.481	
24	2014-09-01 00:44:40	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_224_ZS	12/7	DYN	X	54.621/20.137 40.869/46.05	212.858/ 239.845	
25	2014-09-01 09:06:17	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_226_ZS	12/7	DYN	X	72.806/1.953 3.309/4.03	25.848/ 31.481	
26	2014-09-01 12:44:37	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_228_ZS	12/7	DYN	X	86.665/20.137 40.869/46.05	212.858/ 239.845	
27	2014-09-01 21:06:15	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_230_ZS	12/7	DYN	X	104.85/1.953 3.309/4.03	25.848/ 31.481	
28	2014-09-01 23:59:38	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_232_ZS	12/7	DYN	X	-247.1/1.953 3.309/4.03	25.848/ 31.481	
29	2014-09-02 01:57:41	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_234_ZS	12/7	DYN	X	9.252/1.953 3.309/4.03	25.848/ 31.481	
30	2014-09-02 04:25:17	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1421310_1424510_236_ZS	12/7	DYN	X	-281.386/3.661 6.319/7.632	19.746/ 23.851	

STP 016

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-09-02 13:19:33	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_001_ZS	2/7	DYN	X	-92.784/7.323 13.132/15.594	51.296/ 60.912	XY calibration
2	2014-09-03 00:36:15	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_002_ZS	2/7	DYN	Y	-90.8/6.407 13.565/12.815	60.559/ 57.208	XY calibration
3	2014-09-03 12:49:17	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_003_ZS	2/7	DYN	X	-92.784/7.323 13.132/15.594	51.296/ 60.912	XY calibration
4	2014-09-03 23:53:03	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_007_ZS	2/7	DYN	X	-92.784/7.323 13.132/15.594	51.296/ 60.912	XY calibration
5	2014-09-04 12:49:13	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_010_ZS	2/7	DYN	Y	-92.25/7.323 15.586/14.645	60.885/ 57.208	XY calibration
6	2014-09-05 00:44:19	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_013_ZS	13/7	DYN	X	-233.24/20.0 40.869/40.0	212.858/ 208.333	Coarse prescan, PASS
7	2014-09-05 09:06:25	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_015_ZS	13/7	DYN	X	-216.52/51.883 5.882/15.188	45.955/ 158.205	Fine prescan, PASS
8	2014-09-05 13:14:04	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_017_ZS	13/7	DYN	X	-201.73/20.0 40.869/40.0	212.858/ 208.333	Coarse prescan, PASS
9	2014-09-06 00:43:49	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_019_ZS	13/7	DYN	X	-169.152/20.0 40.869/40.0	212.858/ 208.333	Coarse prescan, PASS
10	2014-09-06 09:05:51	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_021_ZS	13/7	DYN	X	-152.432/51.883 5.882/15.188	45.955/ 158.205	Fine prescan, PASS
11	2014-09-06 12:44:12	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_023_ZS	13/7	DYN	X	-137.108/20.0 40.869/40.0	212.858/ 208.333	Coarse prescan, PASS
12	2014-09-06 21:05:59	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_025_ZS	13/7	DYN	X	-120.388/51.883 5.882/15.188	45.955/ 158.205	Fine prescan, PASS
13	2014-09-07 00:35:43	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_027_ZS	13/7	DYN	X	-105.598/16.667 40.869/33.333	212.858/ 208.333	Coarse prescan, PASS
14	2014-09-07 12:19:11	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_029_ZS	13/7	DYN	X	-73.02/20.0 40.869/40.0	212.858/ 208.333	Coarse prescan, PASS
15	2014-09-07 20:43:49	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_031_ZS	13/7	DYN	X	-56.3/54.263 5.882/20.528	45.955/ 160.378	Fine prescan, PASS

16	2014-09-08 00:44:25	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_033_ZS	13/7	DYN	X	-41.51/20.0 40.869/40.0	212.858/ 208.333	Coarse prescan, PASS
17	2014-09-08 09:05:55	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_035_ZS	13/7	DYN	X	-24.79/51.883 5.882/15.188	45.955/ 158.205	Fine prescan, PASS
18	2014-09-08 12:44:23	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_037_ZS	13/7	DYN	X	-8.932/20.0 40.869/40.0	212.858/ 208.333	Coarse prescan, PASS
19	2014-09-08 21:06:01	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_039_ZS	13/7	DYN	X	7.788/51.883 5.882/15.188	45.955/ 158.205	Fine prescan, PASS
20	2014-09-09 00:44:43	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_041_ZS	13/7	DYN	X	22.578/20.0 40.869/40.0	212.858/ 208.333	Coarse prescan, PASS
21	2014-09-09 09:05:48	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_043_ZS	13/7	DYN	X	39.297/51.883 5.882/15.188	45.955/ 158.205	Fine prescan, PASS

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-09-09 12:43:53	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_045_ZS	14/7	DYN	X	-125.613/39.978 96.302/79.956	429.918/ 356.944	Large coarse scan
2	2014-09-10 12:18:54	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_047_ZS	14/7	DYN	X	-217.218/20.0 40.869/40.0	212.858/ 208.333	Coarse scan
3	2014-09-10 20:43:09	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_049_ZS	14/7	DYN	X	-200.498/54.263 5.882/20.528	45.955/ 160.378	Fine scan
4	2014-09-10 23:46:02	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_051_ZS	14/7	DYN	X	-185.174/20.0 40.869/40.0	212.858/ 208.333	Coarse scan
5	2014-09-11 08:10:51	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_053_ZS	14/7	DYN	X	-168.454/54.263 5.882/20.528	45.955/ 160.378	Fine scan
6	2014-09-11 11:13:08	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_055_ZS	14/7	DYN	X	-153.13/20.0 40.869/40.0	212.858/ 208.333	Coarse scan
7	2014-09-11 19:37:36	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_057_ZS	14/7	DYN	X	-136.41/54.263 5.882/20.528	45.955/ 160.378	Fine scan
8	2014-09-11 22:40:13	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_059_ZS	14/7	DYN	X	-121.086/20.0 40.869/40.0	212.858/ 208.333	Coarse scan
9	2014-09-12 07:04:36	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_061_ZS	14/7	DYN	X	-104.366/54.263 5.882/20.528	45.955/ 160.378	Fine scan
10	2014-09-12 10:07:15	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_063_ZS	14/7	DYN	X	-89.042/20.0 40.869/40.0	212.858/ 208.333	Coarse scan
11	2014-09-12 18:31:41	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_065_ZS	14/7	DYN	X	-72.322/54.263 5.882/20.528	45.955/ 160.378	Fine scan
12	2014-09-12 21:34:21	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_067_ZS	14/7	DYN	X	-57.532/20.0 40.869/40.0	212.858/ 208.333	Coarse scan
13	2014-09-13 05:58:57	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_069_ZS	14/7	DYN	X	-40.812/54.263 5.882/20.528	45.955/ 160.378	Fine scan
14	2014-09-13 09:01:27	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_071_ZS	14/7	DYN	X	-23.352/20.0 40.869/40.0	212.858/ 208.333	Coarse scan
15	2014-09-13 17:25:44	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_073_ZS	14/7	DYN	X	-6.632/54.263 5.882/20.528	45.955/ 160.378	Fine scan

16	2014-09-13 20:28:28	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_075_ZS	14/7	DYN	X	8.158/20.0 40.869/40.0	212.858/ 208.333	Coarse scan
17	2014-09-14 04:52:34	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_077_ZS	14/7	DYN	X	24.878/54.263 5.882/20.528	45.955/ 160.378	Fine scan
18	2014-09-14 14:08:18	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_079_ZS	2/7	DYN	X	-91.716/2.667 13.132/5.333	51.296/ 20.833	Fine scan
19	2014-09-14 23:57:55	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_080_ZS	2/7	DYN	X	-91.716/52.067 13.132/15.594	51.296/ 60.912	Fine scan
20	2014-09-15 10:27:12	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_081_ZS	2/7	DYN	X	-92.784/2.667 13.132/5.333	51.296/ 20.833	Fine scan
21	2014-09-15 21:05:57	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_082_ZS	7/7	DYN	X	-201.73/20.137 40.869/46.05	212.858/ 239.845	Repeat STP014-3
22	2014-09-16 07:24:14	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_084_ZS	7/7	DYN	X	-184.522/2.929 5.016/6.079	26.123/ 31.664	Repeat STP014-4

STP 018

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-09-16 12:44:00	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_086_ZS	10/7	DYN	X	-125.613/40.152 96.302/101.688	429.918/ 453.962	
2	2014-09-21 15:00:58	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_088_ZS	10/7	DYN	X	-125.613/40.152 96.302/101.688	429.918/ 453.962	
3	2014-09-22 09:17:41	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_090_ZS	10/7	DYN	X	-92.051/6.59 6.319/7.632	32.911/ 39.751	
4	2014-09-22 12:02:41	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_092_ZS	10/7	DYN	X	-86.193/6.59 6.319/7.632	32.911/ 39.751	
5	2014-09-22 14:47:42	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_094_ZS	10/7	DYN	X	-92.051/0.732 6.319/7.632	32.911/ 39.751	
6	2014-09-22 17:32:39	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_096_ZS	10/7	DYN	X	-86.193/0.732 6.319/7.632	32.911/ 39.751	
7	2014-09-22 22:05:04	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1424510_1426610_098_ZS	10/7	DYN	X	-49.977/20.137 66.908/46.05	232.321/ 239.845	

STP019

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-09-23 16:00:15	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_001_ZS	2/7	DYN	X	-91.334/6.407 11.382/13.572	50.814/ 60.591	XY calibration
2	2014-09-24 00:22:46	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_005_ZS	2/7	DYN	Y	-91.868/6.407 13.565/12.815	60.559/ 57.208	XY calibration
3	2014-09-24 13:44:00	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_009_ZS	10/5	DYN	X	-120.565/39.978 96.302/79.956	429.918/ 356.944	Coarse scan
4	2014-09-25 13:10:59	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_011_ZS	10/5	DYN	X	-85.295/4.978 8.535/9.956	33.34/ 38.889	Moderate scan
5	2014-09-25 19:37:16	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_013_ZS	3/7	DYN	X	-89.809/4.882 8.535/10.249	33.34/ 40.037	Tip image
6	2014-09-26 03:50:11	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_014_ZS	15/7	DYN	X	-153.664/20.0 40.869/40.0	212.858/ 208.333	Coarse scan
7	2014-09-26 12:15:12	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_016_ZS	15/7	DYN	X	-136.944/3.467 5.882/6.933	45.955/ 54.167	Fine scan
8	2014-09-26 15:17:12	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_018_ZS	15/7	DYN	X	-121.086/20.0 40.869/40.0	212.858/ 208.333	Coarse scan
9	2014-09-26 23:41:24	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_020_ZS	15/7	DYN	X	-104.366/3.467 5.882/6.933	45.955/ 54.167	Fine scan
10	2014-09-27 02:44:14	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_022_ZS	15/7	DYN	X	-89.042/20.0 40.869/40.0	212.858/ 208.333	Coarse scan
11	2014-09-27 11:08:45	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_024_ZS	15/7	DYN	X	-72.322/3.467 5.882/6.933	45.955/ 54.167	Fine scan
12	2014-09-27 14:11:16	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_026_ZS	15/7	DYN	X	-57.532/20.0 40.869/40.0	212.858/ 208.333	Coarse scan
13	2014-09-27 22:35:36	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_028_ZS	15/7	DYN	X	-40.812/3.467 5.882/6.933	45.955/ 54.167	Fine scan

STP 020

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-09-29 13:19:34	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_030_ZS	10/7	DYN	Y	-125.079/39.978 101.858/79.956	454.725/ 356.944	Coarse scan
2	2014-09-30 07:51:22	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_032_ZS	10/7	DYN	Y	-89.809/4.978 10.243/9.956	40.011/ 38.889	aborted
3	2014-10-01 16:01:41	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_034_ZS	10/7	DYN	Y	-125.613/39.978 101.858/79.956	454.725/ 356.944	Coarse scan
4	2014-10-02 11:18:39	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_036_ZS	10/7	DYN	Y	-90.343/4.978 10.243/9.956	40.011/ 38.889	Moderate Scan
5	2014-10-02 23:29:01	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_038_ZS	15/7	DYN	Y	-24.42/20.0 46.072/40.0	239.958/ 208.333	Coarse scan
6	2014-10-03 07:53:09	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_040_ZS	15/7	DYN	Y	-7.7/3.467 7.108/6.933	55.529/ 54.167	Fine scan

STP 021

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-10-05 14:59:29	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_042_ZS	10/7	DYN	Y	-125.613/39.978 101.858/79.956	454.725/ 356.944	Coarse scan
2	2014-10-06 09:53:11	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_044_ZS	10/7	DYN	Y	-95.347/10.0 21.357/20.0	74.156/ 69.444	Moderate scan
3	2014-10-06 18:19:24	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_046_ZS	10/7	DYN	Y	-96.567/7.2 8.93/8.0	27.906/ 25.0	
4	2014-10-07 00:55:44	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_048_ZS	10/7	DYN	Y	-89.733/7.2 8.93/8.0	27.906/ 25.0	
5	2014-10-07 07:31:57	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_050_ZS	10/7	DYN	Y	-82.898/7.2 8.93/8.0	27.906/ 25.0	
6	2014-10-07 14:09:22	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_052_ZS	10/7	DYN	Y	-96.567/0.8 8.93/8.0	27.906/ 25.0	
7	2014-10-07 20:43:44	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_054_ZS	10/7	DYN	Y	-89.733/0.8 8.93/8.0	27.906/ 25.0	
8	2014-10-08 03:16:08	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_056_ZS	10/7	DYN	Y	-82.898/0.8 8.93/8.0	27.906/ 25.0	

STP 022

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-10-12 14:59:34	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_058_ZS	10/7	DYN	Y	-125.613/39.978 101.858/79.956	454.725/ 356.944	
2	2014-10-13 09:53:01	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_060_ZS	10/7	DYN	Y	-95.347/10.0 21.357/20.0	74.156/ 69.444	
3	2014-10-13 18:18:34	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_062_ZS	10/7	DYN	Y	-96.567/7.2 8.93/8.0	27.906/ 25.0	
4	2014-10-14 00:51:57	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_064_ZS	10/7	DYN	Y	-89.733/7.2 8.93/8.0	27.906/ 25.0	
5	2014-10-14 07:27:35	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_066_ZS	10/7	DYN	Y	-82.898/7.2 8.93/8.0	27.906/ 25.0	
6	2014-10-14 14:02:55	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_068_ZS	10/7	DYN	Y	-96.567/0.8 8.93/8.0	27.906/ 25.0	
7	2014-10-14 20:32:34	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_070_ZS	10/7	DYN	Y	-89.733/0.8 8.93/8.0	27.906/ 25.0	
8	2014-10-15 03:02:27	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_072_ZS	10/7	DYN	Y	-82.898/0.8 8.93/8.0	27.906/ 25.0	

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-10-19 13:47:07	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_074_ZS	10/5	DYN	X	-118.963/40.152 96.302/101.688	429.918/ 453.962	
2	2014-10-20 09:52:16	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_076_ZS	10/5	DYN	X	-88.697/9.885 18.195/21.362	63.177/ 74.175	
3	2014-10-20 18:01:23	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_078_ZS	10/5	DYN	X	-82.716/3.905 6.758/8.153	26.397/ 31.847	
4	2014-10-21 00:59:28	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_080_ZS	10/5	DYN	X	-55.348/39.908 96.11/100.95	333.716/ 525.78	
5	2014-10-22 00:24:45	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1426610_1429710_082_ZS	10/5	DYN	X	-25.021/9.763 17.948/21.084	70.111/ 82.359	

STP 025

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-10-29 01:20:52	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_001_ZS	10/5	DYN	X	-120.565/40.152 96.302/101.688	429.918/ 453.962	
2	2014-10-29 20:12:07	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_003_ZS	10/5	DYN	X	-90.299/9.885 18.195/21.362	63.177/ 74.175	
3	2014-10-30 04:21:22	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_005_ZS	10/5	DYN	X	-84.319/3.905 6.758/8.153	26.397/ 31.847	

STP 026

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-10-30 10:43:48	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_007_ZS	10/5	DYN	X	-85.539/1.831 3.098/3.775	9.68/ 11.797	
2	2014-10-30 16:40:04	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_009_ZS	10/5	DYN	X	-82.244/1.831 3.098/3.775	9.68/ 11.797	
3	2014-10-30 22:36:17	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_011_ZS	10/5	DYN	X	-78.949/1.831 3.098/3.775	9.68/ 11.797	
4	2014-10-31 05:10:41	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_013_ZS	10/5	DYN	X	-107.217/27.338 17.948/21.084	70.111/ 82.359	
5	2014-10-31 12:29:12	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_015_ZS	10/5	DYN	X	-89.643/27.338 17.948/21.084	70.111/ 82.359	
6	2014-10-31 19:48:12	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_017_ZS	10/5	DYN	X	-72.068/27.338 17.948/21.084	70.111/ 82.359	
7	2014-11-01 03:05:40	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_019_ZS	10/5	DYN	X	-107.217/9.763 17.948/21.084	70.111/ 82.359	
8	2014-11-01 10:23:53	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_021_ZS	10/5	DYN	X	-89.643/9.763 17.948/21.084	70.111/ 82.359	
9	2014-11-01 17:42:01	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_023_ZS	10/5	DYN	X	-72.068/9.763 17.948/21.084	70.111/ 82.359	
10	2014-11-02 00:59:38	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_025_ZS	10/5	DYN	X	-107.217/-7.811 17.948/21.084	70.111/ 82.359	
11	2014-11-02 08:17:36	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_027_ZS	10/5	DYN	X	-89.643/-7.811 17.948/21.084	70.111/ 82.359	
12	2014-11-02 15:35:35	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_029_ZS	10/5	DYN	X	-72.068/-7.811 17.948/21.084	70.111/ 82.359	
13	2014-11-02 23:10:00	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_031_ZS	10/5	DYN	X	-80.794/0.915 1.533/1.877	3.195/ 3.911	
14	2014-11-03 14:24:42	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_033_ZS	10/5	DYN	X	-45.997/20.137 66.908/46.05	232.321/ 239.845	
15	2014-11-04 03:33:35	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_035_ZS	10/5	DYN	X	-25.677/9.885 18.195/21.362	63.177/ 74.175	

16	2014-11-04 11:43:27	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_037_ZS	10/5	DYN	X	-23.213/7.422 6.758/8.153	26.397/ 31.847	
17	2014-11-04 16:00:19	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_039_ZS	10/5	DYN	X	-16.18/7.422 6.758/8.153	26.397/ 31.847	
18	2014-11-04 20:17:21	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_041_ZS	10/5	DYN	X	-23.213/0.389 6.758/8.153	26.397/ 31.847	
19	2014-11-05 00:34:23	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_043_ZS	10/5	DYN	X	-16.18/0.389 6.758/8.153	26.397/ 31.847	

STP 027

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-11-05 17:33:56	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_045_ZS	10/5	DYN	X	-120.565/40.152 96.302/101.688	429.918/ 453.962	
2	2014-11-06 12:58:11	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_047_ZS	10/5	DYN	X	-99.196/18.783 18.195/21.362	63.177/ 74.175	
3	2014-11-06 21:32:44	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_049_ZS	10/5	DYN	X	-81.401/18.783 18.195/21.362	63.177/ 74.175	
4	2014-11-07 06:05:43	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_051_ZS	10/5	DYN	X	-99.196/0.988 18.195/21.362	63.177/ 74.175	
5	2014-11-07 14:40:08	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_053_ZS	10/5	DYN	X	-81.401/0.988 18.195/21.362	63.177/ 74.175	
6	2014-11-07 22:49:58	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_055_ZS	10/5	DYN	X	-87.442/3.905 6.758/8.153	26.397/ 31.847	
7	2014-11-08 03:06:54	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_057_ZS	10/5	DYN	X	-81.191/3.905 6.758/8.153	26.397/ 31.847	
8	2014-11-08 09:18:40	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_060_ZS	10/5	DYN	X	-89.376/-0.359 6.319/7.632	13.164/ 15.9	
9	2014-11-08 19:07:47	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_062_ZS	10/5	DYN	X	-89.376/-0.359 13.722/16.272	85.762/ 101.699	

STP 028

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-11-14 12:01:50	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_064_ZS	10/5	DYN	X	-119.497/40.152 96.302/101.688	429.918/ 453.962	
2	2014-11-15 14:34:43	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_066_ZS	10/5	DYN	X	-80.333/9.885 18.195/21.362	63.177/ 74.175	
3	2014-11-15 23:08:02	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_068_ZS	10/5	DYN	X	-83.25/3.905 6.758/8.153	26.397/ 31.847	
4	2014-11-16 12:02:32	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_070_ZS	10/5	DYN	X	-50.603/40.152 96.302/101.688	429.918/ 453.962	
5	2014-11-17 07:40:58	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_072_ZS	10/5	DYN	X	-235.135/20.137 40.869/46.05	212.858/ 239.845	
6	2014-11-17 17:35:31	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_074_ZS	10/5	DYN	X	-190.273/20.137 40.869/46.05	212.858/ 239.845	
7	2014-11-18 03:25:20	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_076_ZS	10/5	DYN	X	-144.878/20.137 40.869/46.05	212.858/ 239.845	
8	2014-11-18 13:19:24	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_078_ZS	10/5	DYN	X	34.568/20.137 40.869/46.05	212.858/ 239.845	

STP 029

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-11-19 03:36:04	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_080_ZS	10/7	DYN	X	-274.836/20.076 40.722/45.896	181.796/ 204.891	
2	2014-11-19 15:06:32	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_082_ZS	10/7	DYN	X	-259.642/4.882 8.535/10.249	33.34/ 40.037	
3	2014-11-19 21:34:23	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_084_ZS	10/7	DYN	X	64.296/20.076 40.722/45.896	181.796/ 204.891	
4	2014-11-20 07:11:33	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_086_ZS	10/7	DYN	X	79.49/4.882 8.535/10.249	33.34/ 40.037	
5	2014-11-20 13:17:17	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_088_ZS	10/7	DYN	X	-314.891/20.076 40.722/45.896	181.796/ 204.891	
6	2014-11-20 23:04:02	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_090_ZS	10/7	DYN	X	-299.697/4.882 8.535/10.249	33.34/ 40.037	
7	2014-11-21 04:40:02	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_092_ZS	10/7	DYN	X	104.885/20.076 40.722/45.896	181.796/ 204.891	
8	2014-11-21 15:28:02	RO-D-MIDAS-3-PRL-SAMPLES-V3.0/ IMG_1429710_1432600_094_ZS	10/7	DYN	X	120.079/4.882 8.535/10.249	33.34/ 40.037	

STP 030

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-11-22 05:08:01	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_001_ZS	10/7	DYN	X	-125.613/40.152 96.302/101.688	429.918/ 453.962	
2	2014-11-23 00:58:02	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_003_ZS	10/7	DYN	X	-104.244/9.885 18.195/21.362	63.177/ 74.175	
3	2014-11-23 09:32:02	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_005_ZS	10/7	DYN	X	-86.449/9.885 18.195/21.362	63.177/ 74.175	
4	2014-11-23 18:06:02	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_007_ZS	10/7	DYN	X	-89.367/3.905 6.758/8.153	26.397/ 31.847	
5	2014-11-23 23:11:02	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_009_ZS	10/7	DYN	X	-452.68/20.076 40.722/45.896	181.796/ 204.891	
6	2014-11-24 10:47:02	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_011_ZS	10/7	DYN	X	244.81/20.076 40.722/45.896	181.796/ 204.891	

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-11-26 07:00:24	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_013_ZS	10/5	DYN	X	-55.943/40.152 96.302/101.688	429.918/ 453.962	
2	2014-11-27 01:05:36	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_015_ZS	10/5	DYN	X	-33.587/17.795 18.195/21.362	63.177/ 74.175	
3	2014-11-27 10:35:01	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_017_ZS	10/5	DYN	X	-17.767/17.795 18.195/21.362	63.177/ 74.175	
4	2014-11-27 19:32:09	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_019_ZS	10/5	DYN	X	-33.587/1.976 18.195/21.362	63.177/ 74.175	
5	2014-11-28 03:45:43	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_021_ZS	10/5	DYN	X	-17.767/1.976 18.195/21.362	63.177/ 74.175	
6	2014-11-28 11:42:21	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_023_ZS	10/5	DYN	X	-22.82/3.905 6.758/8.153	26.397/ 31.847	
7	2014-11-28 16:03:41	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_025_ZS	10/5	DYN	X	-16.569/3.905 6.758/8.153	26.397/ 31.847	
8	2014-11-29 06:49:14	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_027_ZS	10/5	DYN	X	-107.228/18.562 19.062/22.339	45.823/ 53.701	
9	2014-11-29 22:24:03	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_029_ZS	10/5	DYN	X	-90.726/18.562 19.062/22.339	45.823/ 53.701	
10	2014-11-30 14:11:04	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_031_ZS	10/5	DYN	X	-74.223/18.562 19.062/22.339	45.823/ 53.701	
11	2014-12-01 06:07:32	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_033_ZS	10/5	DYN	X	-107.228/2.059 19.062/22.339	45.823/ 53.701	
12	2014-12-01 21:39:35	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_035_ZS	10/5	DYN	X	-90.726/2.059 19.062/22.339	45.823/ 53.701	
13	2014-12-02 11:30:33	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_037_ZS	10/5	DYN	X	-74.223/2.059 19.062/22.339	45.823/ 53.701	

STP 033

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-12-10 09:04:53	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_039_ZS	10/7	DYN	X	44.342/40.03 95.919/101.319	374.683/ 395.776	
2	2014-12-11 18:07:34	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1432523_1435400_041_ZS	10/7	DYN	X	48.033/36.338 39.701/44.816	88.619/ 100.036	

STP 035

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-12-20 08:18:44	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_001_ZS	3/5	DYN	X	-127.552/47.673 8.535/10.249	33.34/ 40.037	
2	2014-12-20 17:48:08	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_002_ZS	12/7	DYN	X	-297.862/20.137 40.869/46.05	212.858/ 239.845	
3	2014-12-21 11:12:12	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_004_ZS	12/7	DYN	X	-265.284/20.137 40.869/46.05	212.858/ 239.845	
4	2014-12-21 22:33:43	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_006_ZS	12/7	DYN	X	-232.706/20.137 40.869/46.05	212.858/ 239.845	
5	2014-12-22 12:14:52	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_008_ZS	12/7	DYN	X	-201.73/20.137 40.869/46.05	212.858/ 239.845	
6	2014-12-23 02:03:02	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_010_ZS	12/7	DYN	X	-168.084/20.137 40.869/46.05	212.858/ 239.845	
7	2014-12-23 14:17:06	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_012_ZS	12/7	DYN	X	-154.976/3.905 6.758/8.153	26.397/ 31.847	
8	2014-12-23 18:34:06	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_014_ZS	12/7	DYN	X	-148.725/3.905 6.758/8.153	26.397/ 31.847	

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-12-24 06:18:14	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_016_ZS	12/7	DYN	X	-137.108/20.137 40.869/46.05	212.858/ 239.845	
2	2014-12-24 20:06:32	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_018_ZS	12/7	DYN	X	-105.598/20.137 40.869/46.05	212.858/ 239.845	
3	2014-12-25 09:54:33	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_020_ZS	12/7	DYN	X	-72.486/20.137 40.869/46.05	212.858/ 239.845	
4	2014-12-25 23:42:37	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_022_ZS	12/7	DYN	X	-41.51/20.137 40.869/46.05	212.858/ 239.845	
5	2014-12-26 14:47:45	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_024_ZS	12/7	DYN	X	-8.932/20.137 40.869/46.05	212.858/ 239.845	
6	2014-12-27 01:44:16	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_026_ZS	12/7	DYN	X	4.176/3.905 6.758/8.153	26.397/ 31.847	
7	2014-12-27 06:01:20	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_028_ZS	12/7	DYN	X	10.427/3.905 6.758/8.153	26.397/ 31.847	
8	2014-12-27 20:39:06	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_030_ZS	12/7	DYN	X	-121.174/40.274 84.326/102.057	292.798/ 318.928	
9	2014-12-29 11:33:51	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_032_ZS	12/9	DYN	X	-36.756/40.274 84.326/102.057	292.798/ 318.928	

STP 037

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2014-12-31 07:26:11	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_034_ZS	10/7	DYN	X	44.342/40.03 95.919/101.319	374.683/ 395.776	Image bad
2	2015-01-02 03:50:26	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_036_ZS	10/7	DYN	X	48.033/36.338 39.701/44.816	88.619/ 100.036	Image bad

STP 038

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-01-10 08:42:23	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_038_ZS	12/9	DYN	X	-36.756/40.274 84.326/102.057	292.798/ 318.928	Repeat STP036-9
2	2015-01-12 00:29:22	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1435401_1501400_040_ZS	10/5	DYN	X	-120.443/40.03 95.919/101.319	374.683/ 395.776	

STP 039

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-01-14 05:09:58	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_001_ZS	12/7	DYN	X	23.112/20.137 40.869/46.05	212.858/ 239.845	
2	2015-01-14 18:57:03	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_003_ZS	12/7	DYN	X	54.621/20.137 40.869/46.05	212.858/ 239.845	
3	2015-01-15 07:56:04	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_005_ZS	12/7	DYN	X	70.914/3.844 6.648/8.022	29.678/ 35.815	
4	2015-01-15 21:57:00	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_009_ZS	12/7	DYN	X	86.665/20.137 40.869/46.05	212.858/ 239.845	
5	2015-01-18 05:14:28	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_011_ZS	12/7	DYN	X	-41.51/20.137 40.869/46.05	212.858/ 239.845	Repeat STP036-4
6	2015-01-18 20:59:28	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_013_ZS	12/7	DYN	X	-31.363/20.137 40.869/46.05	212.858/ 239.845	
7	2015-01-19 12:44:43	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_015_ZS	12/7	DYN	X	-21.216/20.137 40.869/46.05	212.858/ 239.845	
8	2015-01-20 04:29:35	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_017_ZS	12/7	DYN	X	-11.069/20.137 40.869/46.05	212.858/ 239.845	
9	2015-01-20 19:22:59	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_019_ZS	12/7	DYN	X	5.224/3.844 6.648/8.022	29.678/ 35.815	

STP 040

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-01-24 05:10:29	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_021_ZS	10/7	DYN	X	-132.448/46.987 118.612/122.939	336.966/ 349.257	
2	2015-01-27 04:36:32	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_023_ZS	12/7	DYN	X	-108.954/23.493 49.133/54.693	219.346/ 244.166	

STP 041

	Start Time	Archive File	Target /Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-02-02 05:16:48	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_025_ZS	12/9	DYN	X	-36.756/40.274 84.326/102.057	292.798/ 318.928	Repeat of STP038-1

STP 042

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-02-04 10:52:34	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_027_ZS	4/11	DYN	X	-2.036/3.661 6.319/7.632	49.366/ 59.627	
2	2015-02-04 12:38:20	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_029_ZS	4/11	DYN	X	-11.8/13.425 25.585/29.594	199.883/ 231.202	
3	2015-02-04 19:10:54	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_031_ZS	11/11	DYN	X	-34.911/40.274 96.685/102.057	302.141/ 318.928	Coarse prescan
4	2015-02-06 00:28:48	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_033_ZS	11/11	DYN	X	0.482/4.882 8.535/10.249	26.672/ 32.029	Fine prescan
5	2015-02-06 07:55:06	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_035_ZS	1/11	DYN	X	0.482/4.882 8.535/10.249	33.34/ 40.037	Z calibration
6	2015-02-07 06:55:10	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_037_ZS	11/11	DYN	X	24.905/40.274 96.685/102.057	302.141/ 318.928	Coarse prescan
7	2015-02-08 12:13:05	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_039_ZS	11/11	DYN	X	60.297/4.882 8.535/10.249	26.672/ 32.029	Fine prescan
8	2015-02-08 19:41:45	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_041_ZS	11/11	DYN	X	-91.233/40.274 84.326/102.057	292.798/ 318.928	Coarse prescan
9	2015-02-09 22:05:05	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_043_ZS	11/11	DYN	X	-59.868/4.882 8.535/10.249	26.672/ 32.029	Fine prescan
10	2015-02-10 05:34:16	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_045_ZS	3/7	DYN	X	-89.809/4.882 8.535/10.249	33.34/ 40.037	Tip image
11	2015-02-10 13:40:42	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1501323_1504200_046_ZS	2/7	DYN	X	-92.784/7.323 13.132/15.594	51.296/ 60.912	XY calibration

STP 043

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-02-15 01:19:30	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_001_ZS	11/11	DYN	X	-35.201/40.03 95.919/101.319	374.683/ 395.776	both scans have glitches
2	2015-02-17 03:29:36	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_003_ZS	3/11	DYN	X	0.482/4.882 8.535/10.249	33.34/ 40.037	Tip image

STP 044

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-02-18 05:21:19	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_004_ZS	12/9	DYN	X	-13.991/18.078 18.566/21.781	52.744/ 61.877	Follow up scans from STP041-1
2	2015-02-18 16:41:20	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_007_ZS	12/9	DYN	X	-34.666/15.023 18.566/21.781	52.744/ 61.877	
3	2015-02-19 04:01:37	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_010_ZS	12/9	DYN	X	-12.465/-19.489 18.566/21.781	52.744/ 61.877	
4	2015-02-19 16:24:41	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_013_ZS	12/9	DYN	X	-32.728/32.219 72.565/78.46	283.456/ 306.483	
5	2015-02-21 05:41:05	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_015_ZS	14/9	DYN	X	-40.539/40.03 95.919/101.319	374.683/ 395.776	Coarse prescan
6	2015-02-24 06:17:15	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_017_ZS	14/9	DYN	X	-40.005/40.03 95.919/101.319	1498.733/ 1583.102	Coarse overview

STP 045

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-02-25 08:57:16	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_019_ZS	3/10	DYN	X	11.648/4.882 8.535/10.249	33.34/ 40.037	Tip image
2	2015-02-25 17:22:45	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_020_ZS	13/10	DYN	X	-24.035/40.03 95.919/101.319	374.683/ 395.776	Prescans target 13
3	2015-02-26 15:50:25	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_022_ZS	13/10	DYN	X	11.114/4.882 8.535/10.249	26.672/ 32.029	
4	2015-02-26 23:39:49	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_024_ZS	13/10	DYN	X	35.781/40.03 95.919/101.319	374.683/ 395.776	
5	2015-02-28 05:40:41	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_026_ZS	13/10	DYN	X	-84.918/40.03 95.919/101.319	374.683/ 395.776	
6	2015-03-01 04:08:10	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_028_ZS	13/10	DYN	X	-49.77/4.882 8.535/10.249	26.672/ 32.029	
7	2015-03-01 11:57:37	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_030_ZS	13/10	DYN	X	-144.2/40.03 95.919/101.319	374.683/ 395.776	
8	2015-03-02 10:25:17	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_032_ZS	13/10	DYN	X	-109.051/4.882 8.535/10.249	26.672/ 32.029	
9	2015-03-02 18:14:50	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_034_ZS	13/10	DYN	X	95.596/40.03 95.919/101.319	374.683/ 395.776	
10	2015-03-03 16:42:17	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_036_ZS	13/10	DYN	X	130.744/4.882 8.535/10.249	26.672/ 32.029	

STP 046

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-03-04 06:18:01	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_038_ZS	4/11	DYN	X	2.77/3.661 6.319/7.632	49.366/ 59.627	
2	2015-03-04 08:05:23	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_040_ZS	4/11	DYN	X	-6.993/13.425 25.585/29.594	199.883/ 231.202	
3	2015-03-04 19:01:54	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_042_ZS	3/13	DYN	X	-5.1/4.882 8.535/10.249	33.34/ 40.037	
4	2015-03-05 03:50:32	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_043_ZS	11/13	DYN	X	-39.715/40.03 95.919/101.319	374.683/ 395.776	Prescans target 11
5	2015-03-06 12:26:25	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_045_ZS	11/13	DYN	X	-7.007/7.323 13.132/15.594	41.037/ 48.73	
6	2015-03-07 04:14:36	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_047_ZS	11/13	DYN	X	20.635/40.03 95.919/101.319	374.683/ 395.776	
7	2015-03-08 12:50:38	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_049_ZS	11/13	DYN	X	53.342/7.323 13.132/15.594	41.037/ 48.73	
8	2015-03-09 00:44:31	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_051_ZS	11/13	DYN	X	-100.064/40.03 95.919/101.319	374.683/ 395.776	
9	2015-03-10 09:20:24	RO-C-MIDAS-3-ESC1-SAMPLES-V3.0/ IMG_1504123_1507000_053_ZS	11/13	DYN	X	-67.357/7.323 13.132/15.594	41.037/ 48.73	

STP 047

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-03-11 04:18:03	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_001_ZS	3/9	DYN	X	-5.391/4.882 8.535/10.249	33.34/ 40.037	Tip image
2	2015-03-11 12:18:35	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_002_ZS	3/9	DYN	X	-2.462/1.953 3.309/4.03	12.924/ 15.74	Tip Image
3	2015-03-11 18:14:19	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_003_ZS	14/9	DYN	X	-30.005/40.03 95.919/101.319	374.683/ 395.776	Follow-up scans to exposure in STP044 of target 14
4	2015-03-13 08:44:39	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_005_ZS	12/9	DYN	X	-13.457/18.078 18.938/22.2	73.977/ 86.717	
5	2015-03-13 17:24:03	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_008_ZS	12/9	DYN	X	-7.736/1.903 0.814/0.999	3.18/ 3.901	feature vector zoom of last image
6	2015-03-14 03:59:31	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_010_ZS	14/9	DYN	X	-40.539/40.03 95.919/101.319	1498.733/ 1583.102	overview scans target 14
7	2015-03-14 10:11:28	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_012_ZS	14/9	DYN	X	-20.779/40.03 95.919/101.319	1498.733/ 1583.102	
8	2015-03-14 16:23:28	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_014_ZS	14/9	DYN	X	-59.766/40.03 95.919/101.319	1498.733/ 1583.102	
9	2015-03-17 08:21:36	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_016_ZS	14/9	DYN	X	-40.539/40.03 95.919/101.319	1498.733/ 1583.102	

STP 048

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-03-18 04:36:25	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_018_ZS	13/10	DYN	X	-25.103/40.03 95.919/101.319	374.683/ 395.776	Prescan, imaging problems
2	2015-03-19 03:17:31	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_020_ZS	3/10	DYN	X	10.045/4.882 8.535/10.249	33.34/ 40.037	Tip image, imaging problems
3	2015-03-21 12:32:56	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_021_ZS	6/10	DYN	X	-25.103/40.03 95.919/101.319	374.683/ 395.776	Effected by resonance curve shifts
4	2015-03-22 11:11:38	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_023_ZS	6/10	DYN	X	-5.576/13.913 13.132/15.594	51.296/ 60.912	
5	2015-03-22 17:31:05	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_025_ZS	6/10	DYN	X	7.605/13.913 13.132/15.594	51.296/ 60.912	
6	2015-03-22 23:34:03	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_027_ZS	6/10	DYN	X	20.785/13.913 13.132/15.594	51.296/ 60.912	
7	2015-03-23 05:37:24	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_029_ZS	6/10	DYN	X	-5.576/0.732 13.132/15.594	51.296/ 60.912	
8	2015-03-23 11:40:20	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_031_ZS	6/10	DYN	X	7.605/0.732 13.132/15.594	51.296/ 60.912	
9	2015-03-23 17:43:15	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_033_ZS	6/10	DYN	X	20.785/0.732 13.132/15.594	51.296/ 60.912	
10	2015-03-24 01:17:09	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_035_ZS	12/7	DYN	X	-30.295/20.137 40.869/46.05	212.858/ 239.845	

STP 049

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-03-25 18:51:52	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_037_ZS	11/14	DYN	X	-50.347/40.03 95.919/101.319	374.683/ 395.776	Coarse prescan, PASS
2	2015-03-27 02:56:14	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1506923_1508813_039_ZS	11/14	DYN	X	-17.639/7.323 13.132/15.594	41.037/ 48.73	Fine prescan, PASS

STP 051

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-04-09 01:06:03	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_001_ZS	3/9	DYN	X	-2.462/1.953 3.309/4.03	12.924/ 15.74	Tip image
2	2015-04-09 06:19:06	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_002_ZS	12/9	DYN	X	-12.923/18.078 18.938/22.2	73.977/ 86.717	
3	2015-04-09 13:59:29	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_005_ZS	12/9	DYN	X	-13.442/18.078 18.938/22.2	73.977/ 86.717	
4	2015-04-10 06:51:35	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_007_ZS	11/14	DYN	X	-49.813/40.03 95.919/101.319	1498.733/ 1583.102	
5	2015-04-11 03:41:48	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_010_ZS	3/7	DYN	X	-87.414/1.953 3.309/4.03	12.924/ 15.74	Tip image
6	2015-04-11 10:01:11	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_011_ZS	13/7	DYN	X	-125.613/40.152 96.302/101.688	429.918/ 453.962	
7	2015-04-12 15:47:55	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_014_ZS	13/10	DYN	X	-25.225/40.152 96.302/101.688	429.918/ 453.962	
8	2015-04-13 21:27:59	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_017_ZS	2/9	DYN	X	-17.137/-9.828 28.24/32.504	220.627/ 253.935	XY calibration
9	2015-04-14 04:35:00	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_020_ZS	2/9	DYN	X	-17.137/12.178 28.24/29.867	220.627/ 233.333	XY calibration

STP 052

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-04-15 09:03:16	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_023_ZS	10/5	DYN	X	-120.382/39.969 95.728/101.134	598.298/ 632.088	
2	2015-04-16 20:42:12	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_026_ZS	2/10	DYN	X	8.139/7.323 13.132/15.594	51.296/ 60.912	XY calibration, imaging issue
3	2015-04-18 03:31:01	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_027_ZS	2/9	DYN	X	-47.648/16.319 92.877/98.379	362.799/ 384.294	XY calibration
4	2015-04-19 12:43:01	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_030_ZS	2/9	DYN	X	-48.182/45.511 92.877/80.0	362.799/ 312.5	XY calibration
5	2015-04-20 22:39:01	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_033_ZS	14/14	DYN	X	-50.469/40.152 96.302/101.688	429.918/ 453.962	

SWT 053

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-04-22 23:34:52	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_036_ZS	3/13	DYN	X	-2.171/1.953 3.309/4.03	12.924/ 15.74	Tip image, tip broken?
2	2015-04-23 16:52:59	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_037_ZS	12/9	DYN	X	-14.967/19.054 22.985/26.721	89.783/ 104.378	
3	2015-04-24 01:33:07	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_040_ZS	12/9	DYN	X	-10.658/2.586 11.267/13.438	44.011/ 52.494	
4	2015-04-24 14:20:46	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_042_ZS	11/14	DYN	X	-50.347/40.03 95.919/101.319	1498.733/ 1583.102	
5	2015-04-25 04:47:06	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_045_ZS	12/9	DYN	X	-36.756/40.274 84.326/102.057	292.798/ 318.928	
6	2015-04-26 13:53:33	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_048_ZS	12/9	DYN	X	-35.154/40.274 84.326/102.057	292.798/ 318.928	
7	2015-04-28 04:32:11	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_051_ZS	6/10	DYN	X	-24.691/40.152 96.302/101.688	429.918/ 453.962	

STP 054

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-04-29 05:21:40	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_054_ZS	14/9	DYN	X	-30.539/40.03 95.919/101.319	374.683/ 395.776	Repeat STP047-3
2	2015-04-30 19:44:26	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_057_ZS	14/9	DYN	X	38.819/-23.543 3.309/4.03	12.924/ 15.74	
3	2015-05-04 01:13:59	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_059_ZS	21/10	DYN	X	-24.569/40.03 95.919/101.319	374.683/ 395.776	Coarse prescan, PASS
4	2015-05-05 01:05:10	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1509813_1512600_062_ZS	12/10	DYN	X	-25.225/40.152 96.302/101.688	429.918/ 453.962	

STP 055

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-05-06 08:15:48	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_001_ZS	14/14	DYN	X	-49.813/40.03 95.919/101.319	374.683/ 395.776	
2	2015-05-07 14:26:04	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_004_ZS	14/14	DYN	X	-21.525/-29.695 0.814/0.999	3.18/ 3.901	
3	2015-05-10 15:40:42	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_006_ZS	11/14	DYN	X	-50.347/40.03 95.919/101.319	374.683/ 395.776	
4	2015-05-12 15:20:40	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_009_ZS	12/7	DYN	X	35.929/20.137 40.869/46.05	255.43/ 287.814	

STP 056

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-05-13 07:12:41	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_012_ZS	3/9	DYN	X	-2.462/1.953 3.309/4.03	12.924/ 15.74	Tip image, distortion due to rebot?
2	2015-05-13 12:28:12	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_013_ZS	2/14	DYN	X	-17.639/7.323 13.132/15.594	51.296/ 60.912	XY calibration, poor scan quality
3	2015-05-14 00:14:26	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_016_ZS	2/14	DYN	X	-17.639/7.323 13.132/15.594	41.037/ 48.73	XY calibration
4	2015-05-14 12:30:27	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_019_ZS	12/9	DYN	X	-35.154/40.274 84.326/102.057	292.798/ 318.928	
5	2015-05-16 08:15:52	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_022_ZS	2/9	DYN	X	-48.182/47.673 92.877/98.379	725.599/ 768.588	XY calibration
6	2015-05-17 00:46:27	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_025_ZS	2/9	DYN	X	-48.182/47.673 92.877/98.379	725.599/ 768.588	XY calibration
7	2015-05-17 17:17:42	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_028_ZS	2/9	DYN	X	-48.182/47.673 92.877/98.379	725.599/ 768.588	XY calibration
8	2015-05-18 10:13:21	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_031_ZS	10/7	DYN	X	44.342/40.03 95.919/101.319	374.683/ 395.776	Rescan STP033-2

STP 057

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-05-20 08:27:53	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_034_ZS	13/10	DYN	X	-25.225/40.152 96.302/101.688	429.918/ 453.962	Repeat STP057-7
2	2015-05-21 16:03:51	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_037_ZS	11/14	DYN	X	-49.813/40.03 95.919/101.319	1498.733/ 1583.102	Repeat STP057-4
3	2015-05-22 03:32:31	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_040_ZS	11/14	DYN	X	-49.813/40.03 95.919/101.319	1498.733/ 1583.102	Repeat STP057-4
4	2015-05-23 07:10:13	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_043_ZS	3/5	DYN	X	-82.366/1.953 3.309/4.03	12.924/ 15.74	Tip image
5	2015-05-23 20:25:07	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_044_ZS	12/10	DYN	X	-25.225/40.152 96.302/101.688	429.918/ 453.962	Repeat STP054-4
6	2015-05-25 03:12:26	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_047_ZS	6/10	DYN	X	-25.225/40.152 96.302/101.688	429.918/ 453.962	Repeat STP053-7

STP 058

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-05-28 20:48:19	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_052_ZS	3/10	DYN	X	10.045/4.882 8.535/10.249	33.34/ 40.037	Tip image
2	2015-06-01 18:32:09	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_053_ZS	12/10	DYN	X	37.337/43.012 22.728/26.435	78.915/ 91.789	Follow up STP054-4
3	2015-06-02 11:14:15	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1512523_1515400_056_ZS	2/10	DYN	X	7.605/7.323 13.132/15.594	51.296/ 60.912	XY calibration, poor quality

STP 059

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-06-03 19:29:23	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_001_ZS	1/6	DYN	Y	244.435/40.03 45.762/80.06	715.035/ 625.47	Z calibration
2	2015-06-04 04:25:31	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_004_ZS	1/7	DYN	Y	245.939/40.03 45.762/80.06	715.035/ 625.47	Z calibration
3	2015-06-04 13:30:11	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_007_ZS	11/14	DYN	X	-50.347/40.03 95.919/101.319	374.683/ 395.776	Repeat STP055-3
4	2015-06-06 08:59:47	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_010_ZS	4/8	CON	Y	-100.055/40.03 101.488/80.06	396.438/ 312.735	
5	2015-06-07 19:04:52	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_013_ZS	21/10	DYN	X	-25.103/40.03 95.919/101.319	374.683/ 395.776	failed

STP 060

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-06-13 08:18:42	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_016_ZS	11/14	DYN	X	-49.813/40.03 95.919/101.319	1498.733/ 1583.102	Repeat STP053-4
2	2015-06-13 19:05:37	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_019_ZS	14/9	DYN	X	21.165/40.03 29.318/72.979	114.523/ 142.537	Follow-up STP054-2
3	2015-06-15 00:55:47	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_022_ZS	3/14	DYN	X	-884.399/1.953 3.905/3.905	15.255/ 15.255	Tip image, failed

STP 061

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-06-17 11:34:12	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_025_ZS	3/10	DYN	X	12.974/1.953 3.309/4.03	12.924/ 15.74	Tip image
2	2015-06-17 19:48:32	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_028_ZS	2/10	DYN	X	7.605/7.323 13.132/15.594	51.296/ 60.912	XY calibration
3	2015-06-18 22:52:32	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_031_ZS	4/8	CON	Y	-100.055/40.03 101.488/80.06	396.438/ 312.735	
4	2015-06-20 08:49:05	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_034_ZS	1/7	DYN	Y	204.561/40.03 101.488/80.06	792.876/ 625.47	Z calibration
5	2015-06-21 00:06:12	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_037_ZS	1/10	DYN	Y	205.079/40.03 101.488/80.06	792.876/ 625.47	Z calibration
6	2015-06-21 16:28:21	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_040_ZS	1/15	DYN	Y	210.042/40.03 101.488/80.06	792.876/ 625.47	Z calibration
7	2015-06-22 08:50:17	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_043_ZS	1/11	DYN	Y	199.788/40.03 101.488/80.06	792.876/ 625.47	Z calibration

STP 062

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-06-24 07:22:34	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_046_ZS	14/9	DYN	X	21.165/40.03 29.318/72.979	114.523/ 142.537	Repeat STP060-2
2	2015-06-25 08:26:42	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_049_ZS	2/7	DYN	X	-105.598/20.137 40.869/46.05	212.858/ 239.845	XY calibration
3	2015-06-26 01:09:27	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_052_ZS	13/10	DYN	X	-25.103/40.03 95.919/101.319	1498.733/ 1583.102	
4	2015-06-26 12:36:36	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_055_ZS	13/10	DYN	X	38.451/40.03 95.919/101.319	1498.733/ 1583.102	
5	2015-06-27 08:35:39	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_058_ZS	2/9	DYN	X	-40.539/40.03 95.919/101.319	374.683/ 395.776	
6	2015-06-28 23:11:49	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_061_ZS	22/10	DYN	Y	-24.691/39.978 101.858/79.956	454.725/ 356.944	Prescan, Pass
7	2015-06-30 00:06:48	RO-C-MIDAS-3-ESC2-SAMPLES-V3.0/ IMG_1515323_1518200_064_ZS	22/10	DYN	Y	38.863/39.978 101.858/79.956	454.725/ 356.944	Prescan, Pass

STP 063

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-07-02 02:29:15	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_001_ZS	3/14	DYN	Y	-12.269/0.711 4.026/1.422	15.727/ 5.556	Tip image, failed in STP060
2	2015-07-02 21:22:16	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_004_ZS	21/14	DYN	Y	-50.469/39.978 101.858/79.956	454.725/ 356.944	Coarse prescans, PASS
3	2015-07-04 08:23:29	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_008_ZS	21/14	DYN	Y	-49.279/40.0 101.488/80.0	396.438/ 312.5	Coarse prescans, PASS
4	2015-07-05 17:22:34	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_012_ZS	21/14	DYN	Y	14.275/40.0 101.488/80.0	396.438/ 312.5	Coarse prescans, PASS

STP 064

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-07-08 11:26:09	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_016_ZS	14/9	DYN	X	-30.539/40.03 95.919/101.319	374.683/ 395.776	

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-07-15 06:30:45	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_019_ZS	10/5	DYN	X	-77.972/5.721 6.758/8.153	26.397/ 31.847	
2	2015-07-15 16:40:04	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_022_ZS	21/14	DYN	Y	78.363/40.0 101.488/80.0	396.438/ 312.5	
3	2015-07-17 00:17:38	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_026_ZS	11/14	DYN	X	-50.347/40.03 95.919/101.319	1498.733/ 1583.102	Diagnostic scans of facet 11 with cantilever 14, various retraction heights and settle times
4	2015-07-17 01:52:32	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_029_ZS	11/14	DYN	X	-48.744/40.03 95.919/101.319	1498.733/ 1583.102	
5	2015-07-17 03:36:45	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_032_ZS	11/14	DYN	X	-50.347/40.03 95.919/101.319	1498.733/ 1583.102	
6	2015-07-17 05:34:52	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_035_ZS	11/14	DYN	X	-48.744/40.03 95.919/101.319	1498.733/ 1583.102	
7	2015-07-17 07:39:54	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_038_ZS	11/14	DYN	X	-50.347/40.03 95.919/101.319	1498.733/ 1583.102	
8	2015-07-17 11:02:03	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_041_ZS	10/10	DYN	Y	224.306/40.0 101.488/80.0	1585.752/ 1250.0	
9	2015-07-18 08:26:10	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_044_ZS	21/14	DYN	Y	-177.454/40.0 101.488/80.0	396.438/ 312.5	
10	2015-07-19 17:55:22	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_048_ZS	12/10	DYN	X	-75.305/40.03 95.919/101.319	1498.733/ 1583.102	
11	2015-07-20 05:36:21	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_052_ZS	12/10	DYN	X	-139.393/40.03 95.919/101.319	1498.733/ 1583.102	
12	2015-07-20 17:17:01	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_056_ZS	12/10	DYN	X	-202.413/40.03 95.919/101.319	1498.733/ 1583.102	
13	2015-07-21 04:58:16	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_060_ZS	12/10	DYN	X	-267.035/40.03 95.919/101.319	1498.733/ 1583.102	

14	2015-07-21 16:10:20	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_064_ZS	10/10	DYN	Y	288.928/40.0 101.488/80.0	1585.752/ 1250.0	

STP 066

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-07-22 19:09:09	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_067_ZS	12/14	DYN	X	39.331/43.012 22.728/26.435	78.915/ 91.789	
2	2015-07-23 14:04:30	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_070_ZS	2/15	DYN	Y	-47.219/1.956 4.026/3.911	15.727/ 15.278	XY calibration
3	2015-07-23 20:19:28	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_073_ZS	2/16	DYN	Y	-2.317/1.956 4.026/3.911	15.727/ 15.278	XY calibration
4	2015-07-24 02:34:45	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_076_ZS	2/12	DYN	Y	-1.539/1.956 4.026/3.911	15.727/ 15.278	XY calibration
5	2015-07-24 10:28:56	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_079_ZS	13/10	DYN	X	-25.103/40.03 95.919/101.319	1498.733/ 1583.102	
6	2015-07-25 08:19:45	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_082_ZS	22/10	DYN	Y	38.329/39.978 101.858/79.956	454.725/ 356.944	
7	2015-07-26 10:54:32	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_085_ZS	22/10	DYN	Y	38.329/39.978 101.858/79.956	454.725/ 356.944	Coarse prescan, failed in STP062
8	2015-07-27 13:36:13	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1518123_1521000_088_ZS	21/10	DYN	Y	-89.313/39.978 101.858/79.956	454.725/ 356.944	Coarse prescan, failed in STP062

STP 067

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-07-29 18:46:40	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1520923_1523800_001_ZS	5/9	DYN	Y	24.083/40.0 101.488/80.0	396.438/ 312.5	
2	2015-07-30 19:48:07	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1520923_1523800_004_ZS	11/14	DYN	X	-49.813/40.03 40.576/45.741	1268.0/ 1429.412	
3	2015-07-30 22:02:26	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1520923_1523800_007_ZS	11/14	DYN	X	-9.783/40.03 40.576/45.741	1268.0/ 1429.412	
4	2015-07-31 00:15:12	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1520923_1523800_010_ZS	11/14	DYN	X	-49.813/0.0 40.576/45.741	1268.0/ 1429.412	
5	2015-07-31 02:28:03	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1520923_1523800_013_ZS	11/14	DYN	X	-9.783/0.0 40.576/45.741	1268.0/ 1429.412	
6	2015-07-31 06:03:04	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1520923_1523800_016_ZS	3/8	CON	X	-61.444/1.953 3.309/4.03	12.924/ 15.74	Tip image
7	2015-07-31 16:49:18	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1520923_1523800_019_ZS	10/10	DYN	Y	225.374/40.0 101.488/80.0	1585.752/ 1250.0	
8	2015-08-01 11:32:09	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1520923_1523800_022_ZS	10/10	DYN	Y	-25.103/-144.08 101.488/80.0	1585.752/ 1250.0	
9	2015-08-01 20:35:37	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1520923_1523800_025_ZS	10/10	DYN	Y	-25.103/224.08 101.488/80.0	1585.752/ 1250.0	
10	2015-08-02 07:48:49	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1520923_1523800_028_ZS	5/9	DYN	Y	-40.539/40.0 101.488/80.0	396.438/ 312.5	

11	2015-08-03 07:34:15	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1520923_1523800_031_ZS	5/9	DYN	Y	-104.627/40.0 101.488/80.0	396.438/ 312.5	
12	2015-08-04 06:54:36	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1520923_1523800_034_ZS	21/14	DYN	Y	-30.332/19.911 45.762/39.822	178.759/ 155.556	

STP 068

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-08-05 07:16:34	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1520923_1523800_038_ZS	21/14	DYN	Y	-83.68/9.458 10.243/9.956	20.005/ 19.444	
2	2015-08-05 22:37:00	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1520923_1523800_040_ZS	21/14	DYN	Y	-74.893/9.458 10.243/9.956	20.005/ 19.444	
3	2015-08-06 14:00:01	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1520923_1523800_042_ZS	21/14	DYN	Y	-83.68/0.497 10.243/9.956	20.005/ 19.444	
4	2015-08-07 05:22:48	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1520923_1523800_044_ZS	21/14	DYN	Y	-74.893/0.497 10.243/9.956	20.005/ 19.444	
5	2015-08-08 07:37:27	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1520923_1523800_046_ZS	21/14	DYN	Y	-94.419/19.911 45.762/39.822	178.759/ 155.556	
6	2015-08-08 23:10:33	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1520923_1523800_050_ZS	21/14	DYN	Y	34.824/19.911 45.762/39.822	178.759/ 155.556	

STP 072

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-09-02 07:18:31	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1523723_1526600_001_ZS	22/14	DYN	Y	45.03/9.458 10.243/9.956	20.005/ 19.444	
2	2015-09-02 22:39:49	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1523723_1526600_003_ZS	22/14	DYN	Y	53.817/9.458 10.243/9.956	20.005/ 19.444	
3	2015-09-03 14:03:05	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1523723_1526600_005_ZS	22/14	DYN	Y	45.03/0.497 10.243/9.956	20.005/ 19.444	
4	2015-09-04 05:26:04	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1523723_1526600_007_ZS	22/14	DYN	Y	53.817/0.497 10.243/9.956	20.005/ 19.444	
5	2015-09-05 07:45:52	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1523723_1526600_009_ZS	2/10	DYN	Y	-5.088/19.911 45.762/39.822	178.759/ 155.556	
6	2015-09-05 23:15:00	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1523723_1526600_013_ZS	2/10	DYN	Y	60.602/19.911 45.762/39.822	178.759/ 155.556	

STP 075

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-09-23 08:49:10	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_001_ZS	21/14	DYN	Y	-49.813/40.0 101.488/80.0	1585.752/ 1250.0	Post-exposure scan
2	2015-09-23 20:24:27	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_005_ZS	21/14	DYN	Y	-113.9/40.0 101.488/80.0	1585.752/ 1250.0	Post-exposure scan
3	2015-09-24 07:57:31	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_009_ZS	21/14	DYN	Y	13.741/40.0 101.488/80.0	1585.752/ 1250.0	Post-exposure scan
4	2015-09-24 19:30:32	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_013_ZS	22/14	DYN	Y	-49.813/40.0 101.488/80.0	1585.752/ 1250.0	Post-exposure scan
5	2015-09-25 05:33:47	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_017_ZS	6/8	CON	Y	-63.869/10.984 8.017/21.968	27.835/ 76.277	
6	2015-09-26 07:27:36	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_019_ZS	6/8	CON	Y	-73.03/38.955 16.401/41.006	73.218/ 183.064	
7	2015-09-26 17:41:23	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_021_ZS	6/8	CON	Y	-59.189/38.955 16.401/41.006	73.218/ 183.064	
8	2015-09-27 03:55:34	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_023_ZS	6/8	CON	Y	-73.03/2.048 16.401/41.006	73.218/ 183.064	
9	2015-09-27 14:09:38	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_025_ZS	6/8	CON	Y	-59.189/2.048 16.401/41.006	73.218/ 183.064	

STP 076

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-10-03 07:35:21	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_027_ZS	6/8	CON	Y	-74.632/38.955 16.401/41.006	73.218/ 183.064	
2	2015-10-04 01:56:58	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_031_ZS	6/8	CON	Y	-60.792/38.955 16.401/41.006	73.218/ 183.064	
3	2015-10-04 20:18:52	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_035_ZS	6/8	CON	Y	-74.632/2.048 16.401/41.006	73.218/ 183.064	
4	2015-10-05 14:41:15	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_039_ZS	6/8	CON	Y	-60.792/2.048 16.401/41.006	73.218/ 183.064	
5	2015-10-06 09:32:06	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_043_ZS	6/8	CON	Y	-63.869/10.984 8.017/21.968	27.835/ 76.277	

STP 077

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-10-07 08:24:52	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_047_ZS	21/14	DYN	Y	-50.469/39.978 101.858/79.956	454.725/ 356.944	
2	2015-10-08 12:50:01	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_051_ZS	21/14	DYN	Y	-114.023/39.978 101.858/79.956	454.725/ 356.944	
3	2015-10-10 08:23:54	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_055_ZS	21/14	DYN	Y	15.221/39.978 101.858/79.956	454.725/ 356.944	
4	2015-10-11 13:17:16	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_059_ZS	21/14	DYN	Y	-177.454/40.0 101.488/80.0	1585.752/ 1250.0	
5	2015-10-12 00:58:18	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_063_ZS	21/14	DYN	Y	77.829/40.0 101.488/80.0	1585.752/ 1250.0	
6	2015-10-12 12:11:02	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_067_ZS	22/14	DYN	Y	-50.469/39.978 101.858/79.956	454.725/ 356.944	
7	2015-10-13 16:33:51	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_071_ZS	22/14	DYN	Y	13.741/40.0 101.488/80.0	1585.752/ 1250.0	

STP 078

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-10-14 08:08:24	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_075_ZS	10/10	DYN	Y	224.825/45.511 58.435/50.133	228.263/ 195.833	Follow-up to STP067
2	2015-10-15 10:04:53	RO-C-MIDAS-3-ESC3-SAMPLES-V3.0/ IMG_1526523_1529400_078_ZS	10/10	DYN	Y	26.686/-144.08 63.34/80.0	329.898/ 277.778	

STP 079

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-10-21 08:22:10	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_001_ZS	21/14	DYN	Y	-178.11/39.978 101.858/79.956	454.725/ 356.944	
2	2015-10-22 11:53:12	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_005_ZS	21/14	DYN	Y	77.707/39.978 101.858/79.956	454.725/ 356.944	
3	2015-10-23 14:29:36	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_009_ZS	2/14	DYN	Y	-14.74/2.0 11.565/4.0	60.233/ 20.833	XY calibration
4	2015-10-24 08:24:01	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_013_ZS	21/14	DYN	Y	-49.935/39.978 101.858/79.956	454.725/ 356.944	
5	2015-10-25 12:49:01	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_017_ZS	21/14	DYN	Y	13.619/39.978 101.858/79.956	454.725/ 356.944	
6	2015-10-26 15:55:51	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_021_ZS	3/8	CON	Y	-61.978/1.956 4.026/3.911	15.727/ 15.278	Tip image
7	2015-10-26 21:19:19	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_025_ZS	3/14	DYN	Y	-12.269/1.956 4.026/3.911	15.727/ 15.278	Tip image
8	2015-10-27 06:35:00	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_029_ZS	10/5	DYN	X	-78.506/5.721 6.758/8.153	26.397/ 31.847	

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-10-28 07:19:12	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_032_ZS	3/10	DYN	Y	13.508/1.956 4.026/3.911	15.727/ 15.278	
2	2015-10-28 14:43:39	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_035_ZS	22/14	DYN	Y	45.633/9.626 10.771/10.133	28.048/ 26.389	
3	2015-10-29 04:38:55	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_037_ZS	22/14	DYN	Y	54.862/9.626 10.771/10.133	28.048/ 26.389	
4	2015-10-29 18:51:27	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_039_ZS	22/14	DYN	Y	45.633/0.506 10.771/10.133	28.048/ 26.389	
5	2015-10-30 09:03:11	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_041_ZS	22/14	DYN	Y	54.862/0.506 10.771/10.133	28.048/ 26.389	
6	2015-10-31 07:28:48	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_043_ZS	21/14	DYN	Y	-82.612/9.458 10.243/9.956	20.005/ 19.444	
7	2015-11-01 05:11:51	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_045_ZS	21/14	DYN	Y	-73.824/9.458 10.243/9.956	20.005/ 19.444	
8	2015-11-02 03:08:44	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_047_ZS	21/14	DYN	Y	-82.612/0.497 10.243/9.956	20.005/ 19.444	
9	2015-11-03 01:05:44	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_049_ZS	21/14	DYN	Y	-73.824/0.497 10.243/9.956	20.005/ 19.444	

STP 081

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-11-04 07:51:50	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_051_ZS	3/14	DYN	Y	-12.269/1.956 4.026/3.911	15.727/ 15.278	Tip image
2	2015-11-04 17:05:20	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_055_ZS	3/10	DYN	Y	13.508/1.956 4.026/3.911	15.727/ 15.278	Tip image
3	2015-11-05 01:25:56	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_058_ZS	21/15	DYN	Y	-185.289/39.978 101.858/79.956	454.725/ 356.944	
4	2015-11-06 03:09:38	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_062_ZS	21/15	DYN	Y	-165.636/8.721 0.873/0.311	3.895/ 1.389	
5	2015-11-07 08:35:37	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_066_ZS	13/14	DYN	X	-50.469/40.152 96.302/101.688	429.918/ 453.962	
6	2015-11-08 16:26:04	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_069_ZS	22/14	DYN	Y	-50.469/39.978 101.858/79.956	454.725/ 356.944	
7	2015-11-09 20:50:57	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_073_ZS	22/14	DYN	Y	13.619/39.978 101.858/79.956	454.725/ 356.944	

STP 082

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-11-11 07:47:41	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_077_ZS	21/15	DYN	Y	77.593/40.0 101.488/80.0	792.876/ 625.0	
2	2015-11-11 18:58:34	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_081_ZS	21/15	DYN	Y	77.593/40.0 101.488/80.0	792.876/ 625.0	
3	2015-11-12 06:17:12	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_085_ZS	3/15	DYN	Y	-45.617/1.956 4.026/3.911	15.727/ 15.278	
4	2015-11-14 07:49:30	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_089_ZS	10/9	DYN	Y	199.775/45.511 58.76/49.956	918.119/ 780.556	
5	2015-11-14 13:03:27	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_092_ZS	10/9	DYN	Y	245.32/45.511 2.001/55.111	7.817/ 215.278	
6	2015-11-15 04:36:37	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_095_ZS	3/14	DYN	X	7701.243/1.953 3.905/3.905	15.255/ 15.255	
7	2015-11-15 06:35:45	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_098_ZS	3/14	DYN	Y	7663.165/40.0 80.06/80.0	312.735/ 312.5	
8	2015-11-16 17:15:42	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_101_ZS	2/14	DYN	Y	-29.92/20.0 46.072/40.0	239.958/ 208.333	
9	2015-11-17 08:50:33	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1529323_1532200_104_ZS	2/14	DYN	Y	-15.198/4.978 10.243/9.956	80.022/ 77.778	

STP 083

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-11-18 08:26:59	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_001_ZS	1/14	DYN	Y	205.471/40.0 101.488/80.0	792.876/ 625.0	
2	2015-11-19 01:17:08	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_004_ZS	1/14	CON	Y	204.937/40.0 101.488/80.0	792.876/ 625.0	
3	2015-11-19 20:23:35	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_008_ZS	1/4	DYN	Y	205.002/40.0 101.488/80.0	792.876/ 625.0	
4	2015-11-20 10:06:19	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_011_ZS	1/7	DYN	Y	204.561/40.0 101.488/80.0	792.876/ 625.0	
5	2015-11-21 08:17:38	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_014_ZS	1/9	DYN	Y	199.79/40.0 101.488/80.0	792.876/ 625.0	
6	2015-11-22 16:59:04	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_017_ZS	14/9	DYN	Y	-30.333/2.853 24.445/22.456	95.487/ 87.718	
7	2015-11-23 05:22:07	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_020_ZS	10/10	DYN	Y	-2.235/-192.736 45.144/40.0	156.751/ 138.889	

STP 084

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-11-25 08:42:18	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_023_ZS	2/14	DYN	Y	-50.347/40.0 101.488/80.0	396.438/ 312.5	XY calibration
2	2015-11-26 21:34:27	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_026_ZS	3/16	DYN	Y	5.494/-5.867 4.026/3.911	15.727/ 15.278	Tip image
3	2015-11-27 06:54:11	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_030_ZS	3/15	DYN	Y	-39.409/-5.867 4.026/3.911	15.727/ 15.278	Tip image
4	2015-11-27 16:00:10	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_034_ZS	3/9	DYN	Y	5.883/-5.867 4.026/3.911	15.727/ 15.278	Tip image
5	2015-11-28 07:31:39	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_038_ZS	10/9	DYN	Y	234.084/37.467 21.078/26.889	82.337/ 76.389	
6	2015-11-29 12:01:01	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_041_ZS	10/9	DYN	Y	212.918/45.511 23.88/26.889	82.916/ 76.389	
7	2015-11-30 03:52:46	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_044_ZS	24/14	DYN	Y	-50.469/39.978 101.858/79.956	454.725/ 356.944	
8	2015-12-01 04:01:27	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_048_ZS	1/16	DYN	Y	259.75/40.0 101.488/80.0	792.876/ 625.0	Z calibration

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-12-02 10:07:41	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_051_ZS	1/1	DYN	Y	204.559/40.0 101.488/80.0	792.876/ 625.0	Z calibration
2	2015-12-03 03:06:55	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_054_ZS	1/2	DYN	Y	204.949/40.0 101.488/80.0	792.876/ 625.0	Z calibration
3	2015-12-03 20:06:00	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_057_ZS	1/3	DYN	Y	205.146/40.0 101.488/80.0	792.876/ 625.0	Z calibration
4	2015-12-04 12:02:40	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_060_ZS	3/1	DYN	Y	-50.967/-13.689 4.026/3.911	15.727/ 15.278	Tip image
5	2015-12-05 08:09:43	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_064_ZS	24/14	DYN	Y	13.619/39.978 101.858/79.956	454.725/ 356.944	
6	2015-12-06 08:03:45	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_068_ZS	24/14	DYN	Y	-114.557/39.978 101.858/79.956	454.725/ 356.944	
7	2015-12-07 13:27:43	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_072_ZS	24/14	DYN	Y	77.707/39.978 101.858/79.956	454.725/ 356.944	
8	2015-12-08 12:34:27	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_076_ZS	3/15	DYN	Y	-46.685/1.956 4.026/3.911	15.727/ 15.278	Tip image

STP 086

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-12-09 13:35:19	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_080_ZS	1/5	DYN	Y	204.803/40.0 101.488/80.0	792.876/ 625.0	
2	2015-12-10 04:50:29	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_083_ZS	1/8	CON	Y	205.431/40.0 101.488/80.0	792.876/ 625.0	
3	2015-12-10 21:57:45	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_086_ZS	1/12	DYN	Y	204.985/40.0 101.488/80.0	792.876/ 625.0	
4	2015-12-11 09:42:28	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_089_ZS	24/14	DYN	Y	-30.393/20.067 45.917/40.133	204.987/ 179.167	
5	2015-12-12 07:44:59	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_093_ZS	10/9	CON	Y	199.775/45.511 58.76/49.956	918.119/ 780.556	
6	2015-12-12 14:48:49	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_097_ZS	10/9	DYN	Y	234.619/37.467 21.078/26.889	82.337/ 76.389	
7	2015-12-13 12:09:38	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_100_ZS	10/9	DYN	Y	207.998/21.558 32.507/22.0	84.653/ 76.389	
8	2015-12-14 15:52:36	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1532123_1535000_103_ZS	10/9	DYN	Y	213.452/45.511 23.88/26.889	82.916/ 76.389	

STP 087

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-12-16 07:22:58	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_001_ZS	3/11	DYN	X	2.877/1.953 3.309/4.03	12.924/ 15.74	Tip image
2	2015-12-16 17:09:35	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_004_ZS	3/2	DYN	Y	-81.686/1.956 4.026/3.911	15.727/ 15.278	Tip image
3	2015-12-17 01:39:39	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_008_ZS	3/3	DYN	Y	-92.17/1.956 4.026/3.911	15.727/ 15.278	Tip image
4	2015-12-17 09:53:45	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_012_ZS	3/4	DYN	Y	-107.268/1.956 4.026/3.911	15.727/ 15.278	Tip image
5	2015-12-17 17:42:19	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_016_ZS	1/6	DYN	Y	205.193/40.0 101.488/80.0	792.876/ 625.0	Z calibration
6	2015-12-19 07:46:47	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_019_ZS	3/15	DYN	Y	-23.253/-13.689 8.147/7.822	15.912/ 15.278	Tip image
7	2015-12-20 15:50:51	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_021_ZS	24/5	DYN	Y	-120.565/39.978 101.858/79.956	454.725/ 356.944	
8	2015-12-21 11:20:09	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_025_ZS	10/5	DYN	Y	-119.909/224.08 101.488/80.0	396.438/ 312.5	

STP 088

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-12-23 08:09:34	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_028_ZS	24/5	DYN	Y	-54.875/39.978 101.858/79.956	454.725/ 356.944	Coarse prescan, PASS
2	2015-12-24 04:37:15	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_032_ZS	24/5	DYN	Y	-184.653/39.978 101.858/79.956	454.725/ 356.944	Coarse prescan, PASS
3	2015-12-25 01:11:07	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_036_ZS	24/5	DYN	Y	7.076/39.978 101.858/79.956	454.725/ 356.944	Coarse prescan, PASS
4	2015-12-26 08:01:15	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_040_ZS	24/5	DYN	Y	-248.207/39.978 101.858/79.956	454.725/ 356.944	Coarse prescan, PASS
5	2015-12-27 04:14:23	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_044_ZS	24/5	DYN	Y	-99.482/20.044 46.072/40.089	130.886/ 113.889	Coarse prescan, PASS
6	2015-12-28 02:07:06	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_048_ZS	24/5	DYN	Y	-35.928/20.044 46.072/40.089	130.886/ 113.889	Coarse prescan, PASS
7	2015-12-28 23:54:22	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_052_ZS	24/5	DYN	Y	-164.638/20.044 46.072/40.089	130.886/ 113.889	Coarse prescan, PASS

STP 089

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2015-12-30 08:37:44	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_056_ZS	1/14	DYN	Y	195.324/40.0 101.488/80.0	1585.752/ 1250.0	
2	2015-12-30 16:11:45	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_059_ZS	1/14	DYN	Y	194.79/40.0 101.488/80.0	1585.752/ 1250.0	
3	2015-12-30 23:45:46	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_062_ZS	1/14	DYN	Y	195.324/40.0 101.488/80.0	1585.752/ 1250.0	
4	2015-12-31 07:19:46	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_065_ZS	1/14	DYN	Y	195.324/40.0 101.488/80.0	1585.752/ 1250.0	
5	2015-12-31 14:53:47	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_068_ZS	1/14	DYN	Y	194.79/40.0 101.488/80.0	1585.752/ 1250.0	
6	2015-12-31 22:27:45	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_071_ZS	1/14	DYN	Y	195.324/40.0 101.488/80.0	1585.752/ 1250.0	
7	2016-01-01 06:18:58	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_074_ZS	10/14	CON	Y	-89.333/224.08 101.488/80.0	792.876/ 625.0	
8	2016-01-02 08:22:47	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_077_ZS	10/14	CON	Y	-153.421/224.08 101.488/80.0	792.876/ 625.0	
9	2016-01-03 04:59:10	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_080_ZS	10/14	CON	Y	102.396/224.08 101.488/80.0	792.876/ 625.0	
10	2016-01-04 01:19:16	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_083_ZS	10/14	CON	Y	-967.872/-144.08 80.06/80.0	625.47/ 625.0	
11	2016-01-04 15:48:12	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_086_ZS	10/14	CON	Y	-153.421/-144.08 101.488/80.0	792.876/ 625.0	
12	2016-01-05 06:05:55	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_089_ZS	10/14	CON	Y	102.396/-144.08 101.488/80.0	792.876/ 625.0	

STP 090

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-01-06 08:25:49	RO-C-MIDAS-3-ESC4-SAMPLES-V3.0/ IMG_1534923_1601300_092_ZS	24/1	DYN	Y	-41.768/39.978 101.858/79.956	454.725/ 356.944	Coarse prescan

STP091

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-01-13 07:50:49	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_001_ZS	3/15	DYN	Y	-23.787/-13.689 4.026/4.267	7.863/ 8.333	Higher resolution tip calibration of cantilever 15, hybrid mode, main scan Y
2	2016-01-14 12:44:11	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_003_ZS	3/14	DYN	Y	-12.269/1.956 4.026/3.911	15.727/ 15.278	Tip calibration of cantilever 14.
3	2016-01-14 22:48:10	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_007_ZS	13/11	DYN	Y	-35.201/40.0 101.488/80.0	396.438/ 312.5	Pre-scan of facet 13 (exposed in OCMs) with tip 11, tip offset 0 µm
4	2016-01-16 07:59:54	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_010_ZS	10/11	DYN	Y	205.648/45.511 45.144/40.0	117.563/ 104.167	
5	2016-01-17 21:34:59	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_013_ZS	13/11	DYN	Y	-99.823/40.0 101.488/80.0	396.438/ 312.5	
6	2016-01-18 19:33:19	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_016_ZS	13/11	DYN	Y	29.421/40.0 101.488/80.0	396.438/ 312.5	

STP 092

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-01-20 07:31:02	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_019_ZS	1/14	DYN	Y	-14.664/1.778 10.243/3.556	40.011/ 13.889	Height Calibration Scan
2	2016-01-20 18:01:16	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_022_ZS	10/14	CON	Y	101.862/224.08 101.488/80.0	792.876/ 625.0	Contact mode scan of target 10 (segment 161) at +152 µm with control data
3	2016-01-21 04:35:13	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_025_ZS	10/14	CON	Y	165.95/224.08 101.488/80.0	792.876/ 625.0	Contact mode scan of target 10 (segment 161) at +216 µm with control data
4	2016-01-21 15:19:53	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_028_ZS	13/11	DYN	Y	-2.982/7.822 16.673/15.644	32.564/ 30.556	16x16µm pre-scan of facet 13 (exposed in OCMs) with tip 11, tip offset 0 µm

STP093

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-01-27 07:45:06	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_030_ZS	10/11	DYN	Y	226.952/45.511 24.162/23.644	58.082/ 52.778	
2	2016-01-28 08:35:35	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_032_ZS	10/11	CON	Y	205.648/45.511 45.917/40.133	204.987/ 179.167	
3	2016-01-29 06:41:46	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_035_ZS	3/11	DYN	X	3.411/1.953 3.309/4.03	12.924/ 15.74	
4	2016-01-29 12:41:56	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_038_ZS	10/9	DYN	Y	-94.143/-139.08 116.976/90.0	1218.504/ 937.5	
5	2016-01-30 07:56:43	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_041_ZS	10/11	DYN	Y	205.648/45.511 45.917/40.133	204.987/ 179.167	
6	2016-01-31 04:11:27	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_044_ZS	10/9	DYN	Y	-158.765/-139.08 116.976/90.0	1218.504/ 937.5	
7	2016-01-31 17:09:52	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_047_ZS	10/9	DYN	Y	34.033/-139.08 116.976/90.0	1218.504/ 937.5	
8	2016-02-01 05:35:52	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_050_ZS	10/9	DYN	Y	34.567/-139.08 116.976/90.0	1218.504/ 937.5	
9	2016-02-01 20:08:17	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_053_ZS	10/9	DYN	Y	-94.143/229.08 116.976/90.0	1218.504/ 937.5	
10	2016-02-02 09:21:28	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_056_ZS	10/9	DYN	Y	35.101/229.08 116.976/90.0	1218.504/ 937.5	

STP 094

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes	
1	2016-02-03 08:48:20	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_059_ZS	2/14	DYN	Y	-48.744/40.0 101.488/80.0	396.438/ 312.5		
2	2016-02-04 22:16:28	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_062_ZS	2/14	DYN	Y	-30.332/19.911 45.762/39.822	178.759/ 155.556		
3	2016-02-06 08:06:06	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_065_ZS	13/11	DYN	Y	-35.201/40.0 101.488/80.0	396.438/ 312.5		
4	2016-02-07 08:55:22	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_068_ZS	3/12	DYN	X	-2.074/1.953 3.309/4.03	12.924/ 15.74	Tip image of tip 12 (planned in STP086, but failed due to vanishing resonance)	
5	2016-02-07 15:33:24	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_071_ZS	24/2	DYN	Y	-119.763/40.0 101.488/80.0	396.438/ 312.5		
6	2016-02-09 03:13:05	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1601223_1604100_074_ZS	24/2	DYN	Y	-100.282/19.911 45.762/39.822	178.759/ 155.556		

STP 096

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-02-10 13:44:00	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_003_ZS	3/11	DYN	Y	26.309/-13.689 4.026/4.267	7.863/ 8.333	Tip calibration / high res scan of dust on tip 11
2	2016-02-11 12:44:18	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_005_ZS	10/9	DYN	Y	34.567/-139.08 116.976/90.0	1218.504/ 937.5	
3	2016-02-12 03:05:04	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_008_ZS	6/10	DYN	Y	-89.191/40.0 101.488/80.0	396.438/ 312.5	
4	2016-02-13 07:43:05	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_011_ZS	10/9	DYN	Y	-113.197/-139.08 46.072/40.0	143.975/ 125.0	
5	2016-02-14 05:04:26	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_014_ZS	10/9	DYN	Y	-113.197/-184.08 46.072/40.0	143.975/ 125.0	
6	2016-02-15 03:11:33	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_017_ZS	10/9	DYN	Y	-177.991/-184.08 46.072/40.0	143.975/ 125.0	
7	2016-02-16 02:57:58	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_020_ZS	6/10	DYN	Y	-63.272/14.933 32.507/29.867	84.653/ 77.778	

STP 096

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-02-17 07:28:15	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_023_ZS	3/1	DYN	Y	13.655/-13.689 4.026/3.911	15.727/ 15.278	Tip calibration of cantilever 1, hybrid mode, main scan Y
2	2016-02-17 17:50:34	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_027_ZS	10/9	DYN	Y	35.101/229.08 116.976/90.0	1218.504/ 937.5	Repeat scan of target 10, segment 161 with tip 11. Tip offset 80 µm, prior to fvec
3	2016-02-18 07:07:41	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_030_ZS	10/9	DYN	Y	35.101/229.08 116.976/90.0	1218.504/ 937.5	Enabled automatic retraction, and fvec
4	2016-02-20 08:12:53	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_034_ZS	6/7	MAG	Y	-40.575/40.0 101.488/80.0	396.438/ 312.5	magnetic mode test
5	2016-02-22 23:22:19	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_038_ZS	6/7	MAG	Y	23.513/40.0 101.488/80.0	396.438/ 312.5	Coarse scan of target 6 (silicon) with tip 7, tip offset +64µm

STP 097

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-02-24 07:28:11	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_040_ZS	3/1	DYN	Y	13.655/-13.689 4.026/3.911	15.727/ 15.278	
2	2016-02-24 17:32:36	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_044_ZS	13/11	DYN	Y	-35.735/40.0 101.488/80.0	396.438/ 312.5	
3	2016-02-25 20:07:01	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_047_ZS	10/9	DYN	Y	57.084/-139.147 52.183/89.867	543.574/ 468.056	Repeat odd scan STP095-2
4	2016-02-26 11:35:33	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_050_ZS	6/7	DYN	Y	-84.114/19.911 45.762/39.822	178.759/ 155.556	
5	2016-02-27 08:20:16	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_053_ZS	10/9	DYN	Y	-113.197/-139.08 46.072/40.0	143.975/ 125.0	Repeat of STP95-4 with higher retraction
6	2016-02-28 23:05:10	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_056_ZS	3/9	DYN	X	-2.462/1.953 3.309/4.03	12.924/ 15.74	
7	2016-02-29 04:11:59	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_059_ZS	10/9	CON	Y	81.737/229.08 45.762/40.0	357.518/ 312.5	
8	2016-02-29 08:20:11	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_062_ZS	6/7	DYN	Y	-104.129/40.0 101.488/80.0	396.438/ 312.5	Strange behaviour in phase
9	2016-03-01 07:36:42	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_065_ZS	6/7	DYN	Y	-20.56/19.911 45.762/39.822	178.759/ 155.556	

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-03-02 08:31:02	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_068_ZS	10/9	DYN	Y	35.101/229.08 116.976/90.0	1218.504/ 937.5	Repeat scan of target 10, segment 161 with tip 9. Tip offset 80 µm, prior to fvec
2	2016-03-02 20:41:52	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_071_ZS	10/9	DYN	Y	118.063/157.798 4.026/7.467	15.727/ 29.167	Follow-up to fvec, 256x256 pixels. Auto retraction height ON
3	2016-03-05 08:58:49	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_075_ZS	6/7	DYN	Y	43.528/19.911 45.762/39.822	178.759/ 155.556	Medium pre-scan of target 6 (silicon)
4	2016-03-05 22:17:20	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_079_ZS	6/1	DYN	Y	-6.367/7.431 8.147/7.822	31.824/ 30.556	High resolution scans of target 6 (new high Q params)
5	2016-03-06 06:44:25	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_083_ZS	6/1	DYN	Y	0.666/7.431 8.147/7.822	31.824/ 30.556	
6	2016-03-06 15:11:29	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_087_ZS	6/1	DYN	Y	-6.367/0.39 8.147/7.822	31.824/ 30.556	
7	2016-03-06 23:38:28	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_091_ZS	6/1	DYN	Y	0.666/0.39 8.147/7.822	31.824/ 30.556	
8	2016-03-07 08:40:10	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_095_ZS	10/9	CON	Y	-133.212/-139.08 45.762/40.0	357.518/ 312.5	Contact mode, control data ON
9	2016-03-07 12:29:38	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1604023_1606900_098_ZS	24/2	DYN	Y	-7.297/7.511 15.181/15.022	36.492/ 36.111	

STP 099

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-03-09 08:21:09	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1606823_1609700_001_ZS	13/11	DYN	Y	-100.357/40.0 101.488/80.0	396.438/ 312.5	Strong tip artifacts
2	2016-03-10 15:06:12	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1606823_1609700_004_ZS	13/11	DYN	Y	29.421/40.0 101.488/80.0	396.438/ 312.5	
3	2016-03-12 09:49:58	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1606823_1609700_007_ZS	10/9	DYN	Y	-113.731/-139.08 46.072/40.0	143.975/ 125.0	Repeat STP097-5
4	2016-03-14 01:24:13	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1606823_1609700_010_ZS	6/7	DYN	Y	-167.148/40.0 101.488/80.0	396.438/ 312.5	
5	2016-03-15 01:09:49	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1606823_1609700_013_ZS	6/7	DYN	Y	88.135/40.0 101.488/80.0	396.438/ 312.5	

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-03-16 11:37:12	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1606823_1609700_016_ZS	13/1	DYN	Y	-104.131/40.0 101.488/80.0	1585.752/ 1250.0	
2	2016-03-19 08:30:00	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1606823_1609700_019_ZS	13/1	DYN	Y	-40.105/40.0 101.673/80.0	353.032/ 277.778	Aborted shortly after start by PDOR since "bad value" checking was not quite right, and we ended up with a working point set to 100% and were applying more force than desired to the sample.
3	2016-03-20 22:34:35	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1606823_1609700_022_ZS	13/1	DYN	Y	-168.753/40.0 101.488/80.0	1585.752/ 1250.0	Unexplained saturation
4	2016-03-21 08:45:22	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1606823_1609700_025_ZS	13/1	DYN	Y	88.666/40.0 101.488/80.0	1585.752/ 1250.0	
5	2016-03-21 19:00:43	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1606823_1609700_028_ZS	13/1	DYN	Y	-232.307/40.0 101.488/80.0	1585.752/ 1250.0	
6	2016-03-22 05:11:49	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1606823_1609700_031_ZS	13/1	DYN	Y	153.288/40.0 101.488/80.0	1585.752/ 1250.0	
7	2016-03-22 15:24:52	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1606823_1609700_034_ZS	13/1	DYN	Y	-104.131/224.08 101.488/80.0	1585.752/ 1250.0	

STP 101

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-03-23 07:24:54	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1606823_1609700_035_ZS	13/1	DYN	Y	23.777/40.0 101.488/80.0	1585.752/ 1250.0	
2	2016-03-23 17:46:54	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1606823_1609700_036_ZS	13/1	DYN	Y	-39.243/-144.08 101.488/80.0	1585.752/ 1250.0	
3	2016-03-24 04:18:29	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1606823_1609700_037_ZS	13/1	DYN	Y	-104.131/-144.08 101.488/80.0	1585.752/ 1250.0	
4	2016-03-24 14:30:54	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1606823_1609700_039_ZS	13/1	DYN	Y	-103.33/-144.08 101.488/80.0	1585.752/ 1250.0	
5	2016-03-25 02:35:54	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1606823_1609700_040_ZS	13/1	DYN	Y	-40.044/224.08 101.488/80.0	1585.752/ 1250.0	

STP 102

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-04-02 22:11:41	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1606823_1609700_043_ZS	6/7	DYN	Y	-40.041/40.0 101.488/80.0	396.438/ 312.5	
2	2016-04-04 02:05:00	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1606823_1609700_047_ZS	3/1	DYN	Y	-1.432/1.956 4.026/3.911	15.727/ 15.278	Wheel should have moved from segment 96 to 48. Reference point was found but then the wheel got stuck at segment 0.
3	2016-04-04 13:33:05	RO-C-MIDAS-3-EXT1-SAMPLES-V3.0/ IMG_1606823_1609700_050_ZS	13/1	DYN	Y	172.098/-15.34 49.502/32.0	96.683/ 83.333	Targeted follow-up of STP100-6 Errors

STP 103

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-04-06 06:54:54	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_000_ZS	11/14	DYN	Y	-50.614/40.0 101.488/80.0	1585.752/ 1250.0	Timeout Error but image recovered
2	2016-04-06 17:33:25	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_001_ZS	13/1	DYN	Y	-104.131/-144.08 101.488/80.0	1585.752/ 1250.0	Timeout Error but image recovered
3	2016-04-07 04:01:45	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_005_ZS	13/1	DYN	Y	-168.219/-144.08 101.488/80.0	1585.752/ 1250.0	
4	2016-04-07 14:25:25	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_009_ZS	13/1	DYN	Y	87.598/-144.08 101.488/80.0	1585.752/ 1250.0	
5	2016-04-08 00:50:05	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_013_ZS	13/1	DYN	Y	-104.131/224.08 101.488/80.0	1585.752/ 1250.0	
6	2016-04-08 11:13:27	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_017_ZS	13/1	DYN	Y	23.51/224.08 101.488/80.0	1585.752/ 1250.0	
7	2016-04-09 08:24:25	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_021_ZS	10/9	DYN	Y	-228.727/45.0 116.976/90.0	1218.504/ 937.5	
8	2016-04-09 23:32:32	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_025_ZS	10/9	DYN	Y	-309.905/45.0 116.976/90.0	1218.504/ 937.5	
9	2016-04-10 17:19:27	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_029_ZS	12/1	DYN	Y	-51.198/40.0 101.303/80.0	633.144/ 500.0	
10	2016-04-11 18:18:16	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_033_ZS	21/1	DYN	Y	-178.489/39.978 101.858/79.956	454.725/ 356.944	Repeat STP79-1 with tip 1

STP 104

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-04-13 09:23:04	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_037_ZS	3/1	DYN	Y	-1.966/1.956 4.026/3.911	15.727/ 15.278	Timeout error
2	2016-04-13 19:18:41	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_041_ZS	6/7	DYN	Y	-40.575/40.0 101.488/80.0	396.438/ 312.5	
3	2016-04-14 19:31:47	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_045_ZS	13/1	MAG	Y	172.098/-15.34 53.136/31.778	110.7/ 90.278	
4	2016-04-17 08:26:29	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_047_ZS	13/2	DYN	Y	-6.762/31.04 45.762/39.822	178.759/ 155.556	Very accurate relocation with tip 2
5	2016-04-18 17:14:13	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_050_ZS	13/2	DYN	Y	-6.762/32.985 45.762/39.822	178.759/ 155.556	
6	2016-04-19 12:49:56	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_054_ZS	13/2	DYN	Y	-6.762/32.985 45.762/39.822	178.759/ 155.556	Scan aborted

STP 105

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-04-21 02:28:06	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_060_ZS	13/1	DYN	Y	89.2/-175.33 33.388/48.889	173.894/ 152.778	
2	2016-04-22 00:15:35	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_064_ZS	13/1	DYN	Y	72.911/-166.181 42.076/36.622	164.359/ 143.056	
3	2016-04-22 18:59:49	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_068_ZS	13/1	MAG	Y	-168.463/-144.08 102.229/80.0	319.466/ 250.0	
4	2016-04-24 07:44:02	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_071_ZS	13/1	DYN	Y	88.666/-138.569 45.762/39.822	178.759/ 155.556	
5	2016-04-25 07:09:49	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_075_ZS	13/1	DYN	Y	23.51/-144.08 101.488/80.0	1585.752/ 1250.0	
6	2016-04-25 16:16:07	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_079_ZS	13/1	DYN	Y	88.132/224.08 101.488/80.0	1585.752/ 1250.0	
7	2016-04-26 00:55:55	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_083_ZS	13/1	DYN	Y	-168.753/224.08 101.488/80.0	1585.752/ 1250.0	
8	2016-04-26 07:13:10	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_087_ZS	10/9	DYN	Y	-40.539/-328.174 101.488/80.0	1585.752/ 1250.0	
9	2016-04-26 15:42:27	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_091_ZS	10/9	DYN	Y	-40.539/-328.174 101.488/80.0	1585.752/ 1250.0	

STP 106

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-04-28 20:23:56	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_095_ZS	13/2	MAG	Y	170.886/-15.34 53.136/31.778	110.7/ 90.278	No data - due to ground station problems.
2	2016-05-01 07:06:00	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_097_ZS	13/1	DYN	Y	-7.435/7.431 8.147/7.822	31.824/ 30.556	
3	2016-05-01 14:31:10	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_101_ZS	13/1	DYN	Y	-0.403/7.431 8.147/7.822	31.824/ 30.556	
4	2016-05-01 21:56:16	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_105_ZS	13/1	DYN	Y	-7.435/0.39 8.147/7.822	31.824/ 30.556	
5	2016-05-02 05:21:23	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1609623_1612500_109_ZS	13/1	DYN	Y	-0.403/0.39 8.147/7.822	31.824/ 30.556	

STP 107

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-05-04 08:35:03	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_001_ZS	13/8	DYN	Y	-103.259/40.0 101.488/80.0	1585.752/ 1250.0	Repeat of STP100-1 with tip 8
2	2016-05-04 18:59:09	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_005_ZS	13/1	MAG	Y	-168.219/-144.08 101.488/80.0	1585.752/ 1250.0	Repeat of STP103-3 with tip 1
3	2016-05-07 15:36:34	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_011_ZS	3/1	DYN	Y	-1.966/1.956 4.026/3.911	15.727/ 15.278	Tip image
4	2016-05-08 07:29:12	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_015_ZS	13/1	DYN	Y	-40.105/408.174 101.673/80.0	1059.097/ 833.333	
5	2016-05-08 17:40:29	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_019_ZS	13/1	DYN	Y	-40.105/-328.174 101.673/80.0	1059.097/ 833.333	
6	2016-05-09 03:13:15	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_023_ZS	13/1	DYN	Y	-231.834/-144.08 101.673/80.0	1059.097/ 833.333	
7	2016-05-09 12:44:39	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_027_ZS	13/1	DYN	Y	152.693/-144.08 101.673/80.0	1059.097/ 833.333	
8	2016-05-09 22:16:34	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_031_ZS	13/1	DYN	Y	-232.368/224.08 101.673/80.0	1059.097/ 833.333	
9	2016-05-10 07:48:43	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_035_ZS	13/1	DYN	Y	152.159/224.08 101.673/80.0	1059.097/ 833.333	
10	2016-05-10 17:05:57	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_039_ZS	13/1	DYN	Y	215.713/224.08 101.673/80.0	1059.097/ 833.333	

STP 108

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-05-11 12:09:29	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_043_ZS	3/15	DYN	Y	21.609/-13.689 4.026/4.267	7.863/ 8.333	Tip image
2	2016-05-12 13:53:59	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_045_ZS	12/1	MAG	Y	-51.854/-144.08 101.673/80.0	353.032/ 277.778	
3	2016-05-13 15:45:58	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_048_ZS	12/1	MAG	Y	-51.854/224.08 101.673/80.0	353.032/ 277.778	
4	2016-05-14 16:49:32	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_051_ZS	3/2	DYN	Y	-1.576/1.956 4.026/3.911	15.727/ 15.278	Tip image
5	2016-05-15 08:04:12	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_055_ZS	13/1	MAG	Y	-40.044/-512.295 101.488/80.0	792.876/ 625.0	
6	2016-05-15 18:23:10	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_062_ZS	13/1	MAG	Y	-39.51/-696.459 101.488/80.0	792.876/ 625.0	
7	2016-05-16 04:32:32	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_069_ZS	13/1	MAG	Y	-39.51/408.174 101.488/80.0	792.876/ 625.0	
8	2016-05-16 14:49:43	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_076_ZS	13/1	MAG	Y	-38.975/592.295 101.488/80.0	792.876/ 625.0	
9	2016-05-16 23:44:11	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_083_ZS	10/9	DYN	Y	-40.066/-512.295 101.673/80.0	1059.097/ 833.333	
10	2016-05-17 12:29:12	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_087_ZS	10/9	DYN	Y	-40.6/592.295 101.673/80.0	1059.097/ 833.333	
11	2016-05-17 23:24:15	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_091_ZS	14/1	DYN	Y	-30.906/2.853 24.445/22.456	95.487/ 87.718	Repeat STP083-6

STP 109

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-05-18 17:27:45	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_095_ZS	3/1	DYN	Y	-1.966/1.956 4.026/3.911	15.727/ 15.278	Tip image
2	2016-05-19 02:35:01	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_099_ZS	3/8	DYN	Y	-2.696/1.956 4.026/3.911	15.727/ 15.278	Tip image
3	2016-05-19 08:24:42	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_103_ZS	13/8	DYN	Y	-103.259/40.0 101.488/80.0	3171.504/ 2500.0	
4	2016-05-19 10:15:10	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_107_ZS	13/8	CON	Y	-103.259/40.0 101.488/80.0	3171.504/ 2500.0	
5	2016-05-19 12:27:09	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_111_ZS	13/8	DYN	Y	-103.259/40.0 101.488/80.0	1585.752/ 1250.0	Repeat STP107-1
6	2016-05-19 20:54:53	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_115_ZS	3/8	DYN	Y	-2.696/1.956 4.026/3.911	15.727/ 15.278	Tip image
7	2016-05-20 02:41:29	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_119_ZS	6/1	MAG	Y	-7.435/7.431 8.147/7.822	31.824/ 30.556	
8	2016-05-20 16:24:25	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_126_ZS	6/1	MAG	Y	-0.403/7.431 8.147/7.822	31.824/ 30.556	
9	2016-05-21 06:08:06	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_133_ZS	6/1	MAG	Y	-7.435/0.39 8.147/7.822	31.824/ 30.556	
10	2016-05-21 19:52:48	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_140_ZS	6/1	MAG	Y	-0.403/0.39 8.147/7.822	31.824/ 30.556	
11	2016-05-22 08:10:49	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_147_ZS	13/1	DYN	Y	-103.597/408.174 101.488/80.0	792.876/ 625.0	
12	2016-05-22 22:30:41	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_151_ZS	13/1	MAG	Y	-168.219/-144.08 101.488/80.0	396.438/ 312.5	

STP 110

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-05-25 07:40:55	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_158_ZS	3/15	DYN	Y	-2.358/-17.157 4.026/4.267	7.863/ 8.333	Tip image
2	2016-05-26 12:42:51	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_160_ZS	13/1	MAG	Y	0.011/-696.459 101.488/80.0	396.438/ 312.5	Follow-up to STP108
3	2016-05-27 22:50:28	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_167_ZS	13/1	MAG	Y	-168.219/-696.459 101.488/80.0	792.876/ 625.0	
4	2016-05-28 09:18:57	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1612423_1615300_174_ZS	13/1	MAG	Y	-232.307/-696.459 101.488/80.0	792.876/ 625.0	

STP 111

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-06-01 07:31:15	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_001_ZS	13/1	MAG	Y	-104.131/-328.174 101.488/80.0	792.876/ 625.0	Fail due incomplete instrument warm-up
2	2016-06-01 17:20:55	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_008_ZS	13/1	MAG	Y	-168.753/-328.174 101.488/80.0	792.876/ 625.0	
3	2016-06-02 04:01:36	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_015_ZS	13/4	MAG	Y	-40.669/-512.295 101.488/80.0	792.876/ 625.0	
4	2016-06-02 12:49:35	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_022_ZS	13/4	MAG	Y	-104.222/-512.295 101.488/80.0	792.876/ 625.0	
5	2016-06-02 21:37:36	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_029_ZS	13/4	MAG	Y	24.487/-512.295 101.488/80.0	792.876/ 625.0	
6	2016-06-03 06:25:40	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_036_ZS	13/4	MAG	Y	-166.708/-512.295 101.488/80.0	792.876/ 625.0	
7	2016-06-03 15:13:36	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_043_ZS	13/4	MAG	Y	88.041/-512.295 101.488/80.0	792.876/ 625.0	

8	2016-06-04 00:01:40	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_050_ZS	13/4	MAG	Y	-231.864/-512.295 101.488/80.0	792.876/ 625.0	
9	2016-06-04 08:49:35	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_057_ZS	13/4	MAG	Y	152.129/-512.295 101.488/80.0	792.876/ 625.0	
10	2016-06-04 17:36:17	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_064_ZS	13/4	MAG	Y	-40.195/776.459 101.673/80.0	1059.097/ 833.333	
11	2016-06-05 07:25:12	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_071_ZS	13/4	MAG	Y	25.083/408.174 101.303/80.0	633.144/ 500.0	
12	2016-06-05 18:31:10	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_078_ZS	13/4	MAG	Y	-167.715/408.174 101.303/80.0	633.144/ 500.0	
13	2016-06-06 05:37:11	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_085_ZS	13/4	MAG	Y	88.102/408.174 101.303/80.0	633.144/ 500.0	
14	2016-06-06 16:43:09	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_092_ZS	13/4	MAG	Y	-231.803/408.174 101.303/80.0	633.144/ 500.0	
15	2016-06-07 03:49:12	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_099_ZS	13/4	MAG	Y	151.656/408.174 101.303/80.0	633.144/ 500.0	

16	2016-06-07 14:34:59	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_106_ZS	3/4	DYN	Y	-2.591/1.956 4.026/3.911	15.727/ 15.278	

STP 112

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-06-08 07:22:21	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_110_ZS	13/4	MAG	Y	-296.486/40.0 101.488/80.0	792.876/ 625.0	
2	2016-06-08 16:29:39	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_117_ZS	13/4	MAG	Y	-40.669/-328.174 101.488/80.0	792.876/ 625.0	Repeat STP107-5
3	2016-06-09 01:37:44	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_124_ZS	13/1	MAG	Y	23.51/-328.174 101.488/80.0	792.876/ 625.0	
4	2016-06-09 12:10:50	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_131_ZS	13/1	MAG	Y	87.598/-328.174 101.488/80.0	792.876/ 625.0	
5	2016-06-09 22:31:43	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_138_ZS	13/1	MAG	Y	-232.307/-328.174 101.488/80.0	792.876/ 625.0	
6	2016-06-10 09:56:44	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_145_ZS	13/4	MAG	Y	-0.202/-696.481 101.858/79.956	454.725/ 356.944	
7	2016-06-11 05:01:07	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_152_ZS	13/4	MAG	Y	-40.669/408.174 101.488/80.0	792.876/ 625.0	Repeat STP108-7
8	2016-06-12 06:57:51	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_159_ZS	13/4	MAG	Y	-104.756/-696.459 101.488/80.0	792.876/ 625.0	
9	2016-06-12 17:07:11	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_166_ZS	13/4	MAG	Y	-231.864/-696.459 101.488/80.0	792.876/ 625.0	
10	2016-06-13 01:44:58	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_173_ZS	3/4	DYN	Y	-2.591/1.956 4.026/3.911	15.727/ 15.278	
11	2016-06-13 10:14:36	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_177_ZS	2/4	DYN	Y	-40.134/40.0 101.488/80.0	792.876/ 625.0	
12	2016-06-13 20:53:13	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_181_ZS	13/4	MAG	Y	216.217/40.0 101.488/80.0	792.876/ 625.0	
13	2016-06-14 16:19:01	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_189_ZS	43/4	DYN	X	-7058.163/7.323 13.132/15.594	51.296/ 60.912	

STP 113

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-06-15 07:31:03	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_193_ZS	13/1	MAG	Y	-104.131/-328.174 101.488/80.0	792.876/ 625.0	
2	2016-06-15 17:48:59	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_200_ZS	13/1	MAG	Y	-168.753/-328.174 101.488/80.0	792.876/ 625.0	
3	2016-06-16 03:45:42	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_207_ZS	3/4	DYN	Y	48.389/1.867 3.518/3.733	7.852/ 8.333	
4	2016-06-16 21:47:58	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_209_ZS	13/4	MAG	Y	-295.418/224.08 101.488/80.0	792.876/ 625.0	
5	2016-06-17 06:35:59	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_216_ZS	13/4	MAG	Y	-295.952/-144.08 101.488/80.0	792.876/ 625.0	
6	2016-06-17 15:23:53	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_223_ZS	13/4	MAG	Y	-360.04/40.0 101.488/80.0	792.876/ 625.0	
7	2016-06-18 00:11:58	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_230_ZS	13/4	MAG	Y	280.305/40.0 101.488/80.0	792.876/ 625.0	
8	2016-06-18 08:59:58	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_237_ZS	13/4	MAG	Y	-360.574/-144.08 101.488/80.0	792.876/ 625.0	
9	2016-06-18 17:44:02	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_244_ZS	10/9	DYN	Y	-40.6/-880.677 101.673/80.0	1059.097/ 833.333	
10	2016-06-19 07:23:35	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_248_ZS	13/4	MAG	Y	279.771/-144.08 101.488/80.0	792.876/ 625.0	
11	2016-06-19 16:12:01	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_255_ZS	13/4	MAG	Y	-360.574/224.08 101.488/80.0	792.876/ 625.0	
12	2016-06-20 00:59:46	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_262_ZS	13/4	MAG	Y	279.771/224.08 101.488/80.0	792.876/ 625.0	
13	2016-06-20 09:34:57	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_269_ZS	13/8	MAG	Y	-48.752/21.25 27.291/25.067	213.207/ 195.833	
14	2016-06-20 13:10:42	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_276_ZS	13/8	CON	Y	-48.752/21.25 27.434/24.978	857.306/ 780.556	
15	2016-06-20 14:38:56	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_280_ZS	13/8	MAG	Y	-48.752/21.25 27.291/25.067	213.207/ 195.833	

16	2016-06-20 19:41:43	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_287_ZS	13/4	MAG	Y	-104.756/-531.045 45.144/40.0	117.563/ 104.167	

STP 114

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-06-22 07:40:35	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_290_ZS	13/4	MAG	Y	-296.486/408.174 101.488/80.0	792.876/ 625.0	
2	2016-06-22 16:37:34	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_297_ZS	13/4	MAG	Y	216.217/408.174 101.488/80.0	792.876/ 625.0	
3	2016-06-23 01:19:40	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_304_ZS	3/8	DYN	Y	-12.31/2.133 4.026/4.267	7.863/ 8.333	
4	2016-06-24 00:29:26	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_306_ZS	10/9	DYN	Y	-40.066/960.677 101.673/80.0	1059.097/ 833.333	
5	2016-06-24 07:27:46	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_310_ZS	13/2	MAG	Y	-167.829/-144.08 101.488/80.0	792.876/ 625.0	
6	2016-06-24 16:15:06	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_317_ZS	13/4	MAG	Y	-80.25/408.174 101.673/80.0	1059.097/ 833.333	
7	2016-06-25 01:43:45	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_324_ZS	13/4	MAG	Y	-197.698/396.446 238.228/238.222	465.288/ 465.278	
8	2016-06-26 08:00:36	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_326_ZS	13/4	MAG	Y	-0.202/-696.481 101.858/79.956	454.725/ 356.944	Repeat STP112-6
9	2016-06-27 02:31:11	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_333_ZS	11/4	MAG	Y	-40.134/40.0 101.488/80.0	792.876/ 625.0	
10	2016-06-27 11:42:59	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_340_ZS	13/4	MAG	Y	-50.816/-322.663 101.488/80.0	396.438/ 312.5	Follow-up STP112-2
11	2016-06-28 07:40:47	RO-C-MIDAS-3-EXT2-SAMPLES-V3.0/ IMG_1615223_1618100_347_ZS	13/4	MAG	Y	-231.742/-328.174 101.118/80.0	526.657/ 416.667	Follow-up STP112-5

STP 115

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-06-29 07:29:19	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_001_ZS	3/2	DYN	Y	-1.576/1.956 4.026/3.911	15.727/ 15.278	Tip image
2	2016-06-29 19:37:30	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_005_ZS	3/4	DYN	Y	23.288/1.867 3.518/3.733	7.852/ 8.333	Tip image
3	2016-06-30 13:10:57	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_007_ZS	1/5	DYN	X	-4.651/0.6 8.535/1.2	33.34/ 37.5	Height calibration scans at different pizeo centres to investigate if there is any non-linear behaviour in the Z piezo/strain gauge
4	2016-06-30 15:24:48	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_011_ZS	1/5	DYN	X	-4.651/0.6 8.535/1.2	33.34/ 37.5	
5	2016-06-30 17:38:39	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_015_ZS	1/5	DYN	X	-4.117/0.6 8.535/1.2	33.34/ 37.5	
6	2016-06-30 19:52:31	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_019_ZS	1/5	DYN	X	-4.117/0.6 8.535/1.2	33.34/ 37.5	
7	2016-06-30 22:06:19	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_023_ZS	1/5	DYN	X	-5.185/0.6 8.535/1.2	33.34/ 37.5	
8	2016-07-01 00:21:40	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_027_ZS	13/2	MAG	Y	-40.188/-328.174 101.488/80.0	3171.504/ 2500.0	
9	2016-07-01 01:59:11	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_034_ZS	13/2	MAG	Y	-20.173/-348.263 45.762/39.822	178.759/ 155.556	
10	2016-07-02 09:37:58	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_047_ZS	13/2	MAG	Y	-0.646/-367.641 0.998/1.067	3.897/ 4.167	
11	2016-07-03 07:19:36	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_054_ZS	13/8	MAG	Y	-43.695/11.85 10.243/9.956	80.022/ 77.778	
12	2016-07-03 09:38:31	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_061_ZS	13/8	CON	Y	-43.695/11.85 10.506/10.0	328.327/ 312.5	
13	2016-07-03 10:56:36	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_065_ZS	13/8	MAG	Y	-43.161/11.85 10.243/9.956	80.022/ 77.778	
14	2016-07-03 14:15:50	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_072_ZS	3/8	DYN	Y	-11.333/1.067 2.001/2.133	7.817/ 8.333	

15	2016-07-03 21:32:19	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_074_ZS	13/2	MAG	Y	-167.829/-328.174 101.488/80.0	792.876/ 625.0	Repeat STP113-2
16	2016-07-04 07:45:07	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_081_ZS	13/4	MAG	Y	-295.952/-144.08 101.488/80.0	792.876/ 625.0	
17	2016-07-04 16:38:42	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_088_ZS	13/2	MAG	Y	-231.917/0.0 101.858/40.133	227.363/ 179.167	Bottom half of STP100-5

STP 116

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-07-06 07:33:51	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_090_ZS	13/2	MAG	Y	-135.93/-144.08 45.144/40.0	156.751/ 138.889	
2	2016-07-07 05:20:44	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_096_ZS	13/2	MAG	Y	-121.102/-159.08 10.375/10.0	36.023/ 34.722	
3	2016-07-08 00:21:24	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_102_ZS	13/2	MAG	Y	-230.849/-328.174 101.488/80.0	396.438/ 312.5	Follow-up STP112-5
4	2016-07-09 00:42:38	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_109_ZS	13/2	MAG	Y	-166.227/-328.174 101.488/80.0	396.438/ 312.5	Follow-up STP113-2
5	2016-07-10 07:17:25	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_116_ZS	13/4	MAG	Y	-104.756/-531.045 21.078/20.0	65.87/ 62.5	Zoom STP113-16
6	2016-07-10 21:20:14	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_121_ZS	3/8	DYN	Y	-2.452/-18.133 3.518/3.733	7.852/ 8.333	Tip image
7	2016-07-11 15:13:34	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_123_ZS	13/4	MAG	Y	-231.742/-328.174 101.118/80.0	526.657/ 416.667	Follow-up STP112-5
8	2016-07-12 06:25:27	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_130_ZS	10/9	DYN	Y	-440.081/960.677 101.673/80.0	1059.097/ 833.333	
9	2016-07-12 13:54:32	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_134_ZS	10/9	DYN	Y	359.949/960.677 101.673/80.0	1059.097/ 833.333	

STP 117

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-07-13 07:09:42	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_138_ZS	1/5	DYN	X	-4.651/0.6 8.535/1.2	33.34/ 37.5	Repeat Z calibration scans at different piezo centres
2	2016-07-13 09:23:55	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_142_ZS	1/5	DYN	X	-5.185/0.6 8.535/1.2	33.34/ 37.5	
3	2016-07-13 11:38:07	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_146_ZS	1/5	DYN	X	-5.185/0.6 8.535/1.2	33.34/ 37.5	
4	2016-07-13 13:52:19	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_150_ZS	1/5	DYN	X	-5.185/0.6 8.535/1.2	33.34/ 37.5	
5	2016-07-13 16:06:28	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_154_ZS	1/5	DYN	X	-5.185/0.6 8.535/1.2	33.34/ 37.5	
6	2016-07-13 18:20:36	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_158_ZS	1/5	DYN	X	-5.185/0.6 8.535/1.2	33.34/ 37.5	
7	2016-07-13 20:34:46	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_162_ZS	1/5	DYN	X	-4.117/0.6 8.535/1.2	33.34/ 37.5	
8	2016-07-13 23:15:52	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_166_ZS	13/3	MAG	Y	151.739/40.0 101.488/80.0	792.876/ 625.0	Coarse re-scan STP100-6
9	2016-07-14 11:19:51	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_173_ZS	10/9	DYN	Y	-440.081/-880.677 101.673/80.0	1059.097/ 833.333	
10	2016-07-14 17:42:50	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_177_ZS	10/9	DYN	Y	359.949/-880.677 101.673/80.0	1059.097/ 833.333	
11	2016-07-15 00:29:52	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_181_ZS	13/3	MAG	Y	-277.593/-161.747 53.136/44.667	110.7/ 93.056	
12	2016-07-17 07:40:19	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_183_ZS	13/3	MAG	Y	-60.686/388.174 46.072/40.0	95.983/ 83.333	
13	2016-07-19 04:48:06	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_185_ZS	11/4	MAG	Y	-40.134/40.0 101.488/80.0	792.876/ 625.0	
14	2016-07-19 16:42:04	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_192_ZS	3/3	DYN	Y	-1.913/-8.044 4.026/3.911	15.727/ 15.278	Tip image

STP 118

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-07-20 07:19:46	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_196_ZS	13/8	DYN	Y	-38.695/11.85 10.243/9.956	80.022/ 77.778	
2	2016-07-20 09:24:25	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_200_ZS	13/8	CON	Y	-38.695/11.85 10.506/10.0	328.327/ 312.5	
3	2016-07-20 09:44:50	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_204_ZS	13/8	DYN	Y	-38.695/11.85 10.243/9.956	80.022/ 77.778	
4	2016-07-20 13:25:24	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_208_ZS	13/4	MAG	Y	0.427/-331.574 21.078/9.956	41.169/ 38.889	Zoom top right particle STP114-10
5	2016-07-21 04:26:11	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_212_ZS	13/4	MAG	Y	-39.618/-363.518 21.078/9.956	41.169/ 38.889	Zoom lower left particle STP114-10
6	2016-07-21 21:09:28	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_216_ZS	13/3	MAG	Y	-39.456/-328.174 101.488/80.0	792.876/ 625.0	Follow-up STP107-5
7	2016-07-22 09:57:47	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_223_ZS	12/4	MAG	Y	-120.778/-144.08 101.488/80.0	792.876/ 625.0	
8	2016-07-22 19:00:44	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_230_ZS	12/4	MAG	Y	39.975/-144.08 101.488/80.0	792.876/ 625.0	
9	2016-07-23 04:03:47	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_237_ZS	12/4	MAG	Y	-120.778/224.08 101.488/80.0	792.876/ 625.0	
10	2016-07-23 13:06:48	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_244_ZS	12/4	MAG	Y	39.441/224.08 101.488/80.0	792.876/ 625.0	
11	2016-07-24 07:16:17	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_251_ZS	13/4	MAG	Y	-343.072/-144.08 21.078/19.911	82.337/ 77.778	
12	2016-07-24 18:53:20	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_258_ZS	13/4	MAG	Y	-103.475/-532.929 15.586/14.933	60.885/ 58.333	Follow-up STP113-16
13	2016-07-25 12:20:33	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1618023_1620900_265_ZS	2/7	DYN	X	-40.285/40.0 96.685/80.0	251.784/ 208.333	XY calibration

STP 119

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-07-27 07:40:47	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_001_ZS	13/3	MAG	Y	182.006/9.956 10.243/9.956	40.011/ 38.889	
2	2016-07-27 21:42:44	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_008_ZS	13/3	MAG	Y	191.769/9.956 10.243/9.956	40.011/ 38.889	
3	2016-07-28 11:48:21	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_015_ZS	13/3	MAG	Y	182.006/0.0 10.243/9.956	40.011/ 38.889	
4	2016-07-29 01:50:40	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_022_ZS	13/3	MAG	Y	191.769/0.0 10.243/9.956	40.011/ 38.889	
5	2016-07-29 16:26:08	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_029_ZS	13/3	MAG	Y	190.671/2.0 2.253/2.0	7.823/ 6.944	Zoom
6	2016-07-30 08:35:17	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_034_ZS	13/3	MAG	Y	190.671/0.0 2.253/2.0	7.823/ 6.944	Zoom
7	2016-07-31 07:24:43	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_039_ZS	13/4	MAG	Y	-296.486/408.174 101.488/80.0	792.876/ 625.0	Coarse re-scan STP114 1
8	2016-07-31 16:06:52	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_046_ZS	13/4	MAG	Y	-251.937/347.725 0.998/0.356	3.897/ 1.389	
9	2016-08-01 22:16:30	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_053_ZS	1/1	DYN	Y	264.177/45.0 116.976/90.0	1218.504/ 937.5	Z calibration
10	2016-08-02 03:16:09	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_057_ZS	1/2	DYN	Y	199.945/45.0 116.976/90.0	1218.504/ 937.5	Z calibration
11	2016-08-02 08:14:18	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_061_ZS	1/3	DYN	Y	200.142/45.0 116.976/90.0	1218.504/ 937.5	Z calibration
12	2016-08-02 12:50:33	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_065_ZS	1/3	DYN	Y	200.676/45.0 116.976/90.0	1218.504/ 937.5	Z calibration
13	2016-08-02 16:46:09	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_069_ZS	2/7	DYN	X	-20.56/19.911 40.576/39.822	158.5/ 155.556	XY calibration

STP 120

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-08-03 07:06:37	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_072_ZS	3/8	DYN	Y	-2.696/-8.044 4.026/3.911	15.727/ 15.278	Tip image
2	2016-08-03 14:42:18	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_076_ZS	3/4	DYN	Y	23.044/-18.044 3.518/3.733	7.852/ 8.333	Tip image
3	2016-08-04 08:12:57	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_078_ZS	3/3	DYN	Y	-1.913/-28.044 4.026/3.911	15.727/ 15.278	Tip image
4	2016-08-04 20:30:44	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_082_ZS	13/4	MAG	Y	-103.475/-529.195 15.586/14.933	60.885/ 58.333	Zoom top left STP118-6
5	2016-08-05 08:07:54	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_089_ZS	13/2	MAG	Y	253.707/-212.124 101.488/80.0	792.876/ 625.0	
6	2016-08-05 19:22:18	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_096_ZS	13/3	MAG	Y	-39.99/-328.174 101.488/80.0	396.438/ 312.5	Repeat STP118-5
7	2016-08-07 07:31:58	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_103_ZS	13/3	MAG	Y	79.64/-696.459 101.488/80.0	792.876/ 625.0	
8	2016-08-07 18:42:10	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_110_ZS	13/3	MAG	Y	159.75/-696.459 101.488/80.0	792.876/ 625.0	
9	2016-08-08 05:31:22	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_117_ZS	13/5	DYN	Y	-63.517/20.0 45.608/40.0	475.079/ 416.667	
10	2016-08-08 08:52:23	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_121_ZS	13/5	CON	Y	-81.777/23.1 45.762/40.0	1430.07/ 1250.0	
11	2016-08-08 10:42:45	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_125_ZS	13/5	DYN	Y	-64.051/20.0 45.608/40.0	475.079/ 416.667	
12	2016-08-08 14:37:27	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_129_ZS	3/5	DYN	X	-2.256/1.953 3.309/4.03	12.924/ 15.74	
13	2016-08-08 21:53:07	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1620823_1622300_133_ZS	13/3	MAG	Y	-267.448/-171.636 26.718/24.889	83.495/ 77.778	Zoom STP117-11

STP 121

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-08-10 01:34:51	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_001_ZS	3/4	DYN	Y	25.937/-8.044 4.026/3.911	15.727/ 15.278	Tip image
2	2016-08-10 13:16:55	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_004_ZS	12/4	MAG	Y	39.38/-144.08 101.673/80.0	1059.097/ 833.333	Follow-up STP118-8
3	2016-08-10 20:49:30	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_010_ZS	12/4	MAG	Y	62.416/-172.39 18.726/16.756	45.015/ 40.278	
4	2016-08-12 13:02:45	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_012_ZS	13/5	DYN	Y	-39.86/-328.174 101.673/80.0	1059.097/ 833.333	Rescan STP107-5
5	2016-08-12 20:17:59	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_015_ZS	13/5	DYN	Y	-4.468/-363.285 9.848/9.778	27.977/ 27.778	Zoom STP107-5
6	2016-08-13 12:59:34	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_017_ZS	10/9	DYN	Y	212.918/45.511 23.88/32.933	373.122/ 343.056	Coarse repeat STP084-6
7	2016-08-13 14:53:18	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_020_ZS	10/9	CON	Y	265.327/-8.044 23.88/32.933	373.122/ 343.056	Contact mode repeat STP084-6 region
8	2016-08-13 17:18:17	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_023_ZS	10/9	DYN	Y	213.986/45.511 23.88/32.933	373.122/ 343.056	Rescan after contact mode scan
9	2016-08-13 20:42:42	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_026_ZS	10/9	DYN	Y	199.775/45.511 58.435/50.133	228.263/ 195.833	Rescan STP082-4
10	2016-08-14 10:33:37	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_029_ZS	10/9	CON	Y	199.775/45.511 58.76/50.0	1836.238/ 1562.5	Coarse repeat in contact mode
11	2016-08-14 11:25:40	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_032_ZS	10/9	DYN	Y	199.775/45.511 58.76/49.956	918.119/ 780.556	Rescan after contact mode scan
12	2016-08-14 15:19:31	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_035_ZS	3/9	DYN	Y	39.796/-13.044 3.518/3.733	7.852/ 8.333	Tip image

STP 122

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-08-15 13:00:52	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_037_ZS	13/4	MAG	Y	-120.778/592.295 101.488/80.0	792.876/ 625.0	
2	2016-08-15 22:33:55	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_044_ZS	13/4	MAG	Y	-119.71/592.295 101.488/80.0	792.876/ 625.0	
3	2016-08-16 12:21:32	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_051_ZS	13/4	MAG	Y	310.038/9.778 10.243/9.778	32.009/ 30.556	
4	2016-08-16 22:53:04	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_056_ZS	13/4	MAG	Y	319.801/9.778 10.243/9.778	32.009/ 30.556	
5	2016-08-17 09:29:56	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_061_ZS	13/4	MAG	Y	310.038/0.0 10.243/9.778	32.009/ 30.556	
6	2016-08-17 19:56:43	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_066_ZS	13/4	MAG	Y	319.801/0.0 10.243/9.778	32.009/ 30.556	
7	2016-08-18 12:31:22	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_071_ZS	13/4	MAG	Y	-200.354/592.295 101.488/80.0	792.876/ 625.0	
8	2016-08-18 22:04:23	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_078_ZS	13/4	MAG	Y	119.551/592.295 101.488/80.0	792.876/ 625.0	
9	2016-08-19 12:21:26	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_085_ZS	13/4	MAG	Y	54.22/9.778 10.243/9.778	32.009/ 30.556	
10	2016-08-19 22:54:58	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_090_ZS	13/4	MAG	Y	63.983/9.778 10.243/9.778	32.009/ 30.556	
11	2016-08-20 09:33:29	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_095_ZS	13/4	MAG	Y	54.22/0.0 10.243/9.778	32.009/ 30.556	

STP 123

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-08-21 12:30:01	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_104_ZS	13/4	MAG	Y	-40.669/592.295 101.488/80.0	792.876/ 625.0	Repeat STP108-8
2	2016-08-21 21:17:28	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_111_ZS	13/4	MAG	Y	-231.864/40.0 101.488/80.0	792.876/ 625.0	Repeat STP100-5
3	2016-08-22 12:35:06	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_118_ZS	13/4	MAG	Y	-167.242/40.0 101.488/80.0	792.876/ 625.0	Repeat STP100-3
4	2016-08-22 21:23:15	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_125_ZS	13/4	MAG	Y	80.03/-696.459 101.488/80.0	792.876/ 625.0	Repeat STP120-7
5	2016-08-23 06:12:07	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_132_ZS	13/4	MAG	Y	-295.952/40.0 101.488/80.0	792.876/ 625.0	Repeat STP112-1
6	2016-08-23 15:00:34	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_139_ZS	13/4	MAG	Y	-104.756/408.174 101.488/80.0	792.876/ 625.0	Repeat STP109-11
7	2016-08-23 22:46:40	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_146_ZS	13/4	MAG	Y	-64.726/368.174 46.072/40.0	239.958/ 208.333	Zoom bottom half last scan
8	2016-08-24 12:28:36	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_153_ZS	13/4	MAG	Y	-159.765/-696.459 101.488/80.0	792.876/ 625.0	Follow-up STP120-7
9	2016-08-24 21:16:58	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_160_ZS	13/4	MAG	Y	-296.486/40.0 101.488/80.0	792.876/ 625.0	Follow-up STP112-1
10	2016-08-25 12:35:11	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_167_ZS	13/4	MAG	Y	215.683/40.0 101.488/80.0	792.876/ 625.0	Repeat STP112-12

11	2016-08-25 21:23:10	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_174_ZS	13/4	MAG	Y	151.595/224.08 101.488/80.0	792.876/ 625.0	Repeat STP107-9
12	2016-08-26 06:11:08	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_181_ZS	13/4	MAG	Y	215.683/408.174 101.488/80.0	792.876/ 625.0	Repeat STP114-2
13	2016-08-26 14:59:12	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_188_ZS	13/4	MAG	Y	151.595/40.0 101.488/80.0	792.876/ 625.0	Repeat STP100-6
14	2016-08-26 22:36:41	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_195_ZS	13/4	MAG	Y	171.61/9.956 45.762/19.911	178.759/ 155.556	Try zoom previous scan
15	2016-08-27 12:14:36	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_202_ZS	10/9	DYN	Y	213.986/45.511 23.88/32.933	373.122/ 343.056	Coarse repeat STP084-6
16	2016-08-27 14:25:29	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_205_ZS	10/9	CON	Y	220.874/-20.0 23.88/32.933	373.122/ 343.056	Coarse repeat STP084-6 in contact mode
17	2016-08-27 16:33:30	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_208_ZS	10/9	DYN	Y	214.52/45.511 23.88/32.933	373.122/ 343.056	Coarse repeat STP084-6 after contact scan
18	2016-08-27 19:50:40	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_211_ZS	13/4	MAG	Y	-120.244/592.295 101.488/80.0	792.876/ 625.0	Coarse Repeat STP122-1 MAG mode
19	2016-08-28 12:27:26	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_218_ZS	13/4	MAG	Y	-231.864/0.0 101.858/40.133	227.363/ 179.167	Follow-up STP100-5
20	2016-08-29 08:01:31	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_222_ZS	13/4	MAG	Y	-119.176/592.295 101.488/80.0	792.876/ 625.0	Repeat STP122-2
21	2016-08-29 16:10:22	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_229_ZS	13/4	MAG	Y	215.683/-144.08 101.488/80.0	792.876/ 625.0	Repeat STP120-5
22	2016-08-30 00:13:36	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_236_ZS	10/9	DYN	Y	36.169/229.058 116.976/89.956	1827.757/ 1405.556	Coarse rescan STP098-1

23	2016-08-30 02:55:42	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_239_ZS	10/9	CON	Y	36.23/229.08 116.784/90.0	3649.494/ 2812.5	Scan previous in contact mode
24	2016-08-30 04:40:54	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_242_ZS	10/9	DYN	Y	35.162/229.08 116.784/90.0	3649.494/ 2812.5	Rescan after contact mode

STP 124

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-08-30 12:10:45	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_245_ZS	3/4	DYN	Y	24.868/-8.044 4.026/3.911	15.727/ 15.278	Tip image
2	2016-08-30 17:08:26	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_248_ZS	3/9	DYN	Y	24.998/-18.044 4.026/3.911	15.727/ 15.278	Tip image
3	2016-08-31 01:14:33	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_251_ZS	10/9	DYN	Y	199.775/45.511 58.435/49.956	456.525/ 390.278	Repeat STP082-4
4	2016-08-31 12:47:38	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_254_ZS	13/4	MAG	Y	-259.675/40.0 45.762/79.644	178.759/ 155.556	Repeat STP123-5 higher resolution
5	2016-09-01 10:35:20	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1622223_1624607_258_ZS	13/4	MAG	Y	-259.675/40.0 45.762/79.644	178.759/ 155.556	

STP 125

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-09-02 12:22:13	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_001_ZS	13/4	MAG	Y	-40.669/542.295 44.528/29.867	86.968/ 77.778	Repeat STP123-1
2	2016-09-03 12:29:17	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_003_ZS	13/4	MAG	Y	-270.216/19.375 57.141/39.867	111.604/ 95.833	Zoom of STP123-9
3	2016-09-04 13:00:02	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_005_ZS	13/4	MAG	Y	-120.778/592.295 101.488/80.0	792.876/ 625.0	Repeat STP122-1
4	2016-09-04 22:33:14	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_012_ZS	13/4	MAG	Y	-120.244/592.295 101.488/80.0	792.876/ 625.0	Repeat STP122-1

STP 126

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-09-05 12:32:56	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_019_ZS	13/4	MAG	Y	216.217/-144.08 101.488/80.0	792.876/ 625.0	
2	2016-09-05 22:13:37	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_026_ZS	13/4	MAG	Y	151.595/40.0 101.488/80.0	792.876/ 625.0	
3	2016-09-06 12:42:53	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_033_ZS	13/4	MAG	Y	-139.75/-696.459 45.762/80.0	357.518/ 312.5	
4	2016-09-07 00:05:07	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_040_ZS	13/4	MAG	Y	216.751/40.0 21.636/79.644	169.029/ 155.556	
5	2016-09-07 12:59:52	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_047_ZS	13/4	MAG	Y	206.896/40.051 45.299/39.867	108.891/ 95.833	
6	2016-09-08 12:23:36	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_049_ZS	13/4	DYN	Y	-99.116/592.295 64.994/46.933	145.076/ 122.222	
7	2016-09-09 12:35:19	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_051_ZS	13/4	MAG	Y	39.441/592.295 101.488/80.0	792.876/ 625.0	
8	2016-09-09 21:17:20	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_058_ZS	13/4	MAG	Y	-120.778/776.459 101.488/80.0	792.876/ 625.0	
9	2016-09-10 05:59:19	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_065_ZS	13/4	MAG	Y	39.441/776.459 101.488/80.0	792.876/ 625.0	
10	2016-09-10 14:41:19	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_072_ZS	13/4	MAG	Y	-200.354/776.459 101.488/80.0	792.876/ 625.0	
11	2016-09-10 23:23:19	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_079_ZS	13/4	MAG	Y	120.085/776.459 101.488/80.0	792.876/ 625.0	

STP 127

	Start Time	Archive File	Target/Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-09-11 12:11:04	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_086_ZS	3/4	DYN	Y	-2.591/21.956 4.026/3.911	15.727/ 15.278	Tip image
2	2016-09-11 17:39:30	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_090_ZS	3/5	DYN	Y	-29.716/21.956 4.026/3.911	15.727/ 15.278	Tip image
3	2016-09-12 00:35:03	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_094_ZS	3/3	DYN	Y	25.547/21.956 4.026/3.911	15.727/ 15.278	Tip image
4	2016-09-12 12:26:09	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_098_ZS	13/1	MAG	Y	-232.307/25.422 45.762/40.0	715.035/ 625.0	Coarse repeat STP100-5
5	2016-09-12 15:19:35	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_105_ZS	13/1	CON	Y	-232.307/25.422 45.762/40.0	1430.07/ 1250.0	Coarse repeat STP100-5,contact mode
6	2016-09-12 16:04:57	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_108_ZS	13/1	MAG	Y	-232.307/25.422 45.762/40.0	715.035/ 625.0	Coarse repeat STP100-5, after contact mode
7	2016-09-12 20:08:34	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_115_ZS	13/4	MAG	Y	-100.763/572.295 45.762/40.0	357.518/ 312.5	Repeat STP125-4
8	2016-09-13 02:39:32	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_122_ZS	10/9	DYN	Y	35.696/184.08 52.025/44.978	812.885/ 702.778	Repeat STP123-24
9	2016-09-13 04:06:59	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_125_ZS	10/9	CON	Y	58.152/206.569 52.183/44.978	1630.722/ 1405.556	Follow-up STP123-24, contact mode
10	2016-09-13 04:41:46	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_128_ZS	10/9	DYN	Y	35.696/184.08 52.025/44.978	812.885/ 702.778	Rescan STP127-9 after contact mode
11	2016-09-13 07:25:46	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_131_ZS	13/5	DYN	Y	-82.311/23.1 45.608/40.0	475.079/ 416.667	Repeat STP120-10
12	2016-09-13 09:29:10	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_135_ZS	13/5	CON	Y	-82.311/23.1 45.762/40.0	1430.07/ 1250.0	Repeat STP120-10, contact mode
13	2016-09-13 10:21:19	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_139_ZS	13/5	DYN	Y	-82.311/23.1 45.608/40.0	475.079/ 416.667	Repeat STP120-10, after contact mode
14	2016-09-13 14:08:23	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_143_ZS	13/4	MAG	Y	215.683/-144.08 101.488/80.0	792.876/ 625.0	
15	2016-09-13 22:57:05	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_150_ZS	13/4	MAG	Y	151.595/40.0 101.488/80.0	792.876/ 625.0	

16	2016-09-14 12:20:49	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_157_ZS	1/5	DYN	X	-4.575/0.6 7.42/1.2	33.125/ 37.5	Additional height calibration at diferent piezo centre positions
17	2016-09-14 14:26:59	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_161_ZS	1/5	DYN	X	-4.041/0.6 7.42/1.2	33.125/ 37.5	
18	2016-09-14 16:33:11	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_165_ZS	1/5	DYN	X	-4.575/0.6 7.42/1.2	33.125/ 37.5	
19	2016-09-14 18:39:22	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_169_ZS	1/5	DYN	X	-4.575/0.6 7.42/1.2	33.125/ 37.5	
20	2016-09-14 20:45:29	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_173_ZS	1/5	DYN	X	-4.575/0.6 7.42/1.2	33.125/ 37.5	
21	2016-09-14 22:51:42	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_177_ZS	1/5	DYN	X	-4.041/0.6 7.42/1.2	33.125/ 37.5	
22	2016-09-15 01:57:48	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_181_ZS	1/5	DYN	X	-4.041/0.6 7.42/1.2	33.125/ 37.5	
23	2016-09-16 18:38:30	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_191_ZS	13/4	MAG	Y	199.661/592.295 101.488/80.0	792.876/ 625.0	
24	2016-09-18 16:03:09	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_198_ZS	13/4	MAG	Y	-279.991/776.459 101.673/80.0	1059.097/ 833.333	
25	2016-09-18 23:25:01	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_205_ZS	13/4	MAG	Y	199.6/776.459 101.673/80.0	1059.097/ 833.333	
26	2016-09-19 06:46:50	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_212_ZS	2/7	DYN	X	-20.087/20.067 40.722/40.133	181.796/ 179.167	XY calibration
27	2016-09-19 18:02:41	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_216_ZS	13/4	MAG	Y	-270.216/19.375 58.76/49.956	918.119/ 780.556	Repeat STP125-2
28	2016-09-19 20:51:30	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_223_ZS	13/4	CON	Y	-270.216/19.375 58.76/50.0	1836.238/ 1562.5	Repeat STP127-27, contact mode
29	2016-09-19 21:34:18	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_226_ZS	13/4	MAG	Y	-270.216/19.375 58.76/49.956	918.119/ 780.556	Rescan after contact mode
30	2016-09-20 00:37:24	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_233_ZS	3/4	DYN	Y	-56.976/1.956 4.026/3.911	15.727/ 15.278	Tip image

STP 128

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-09-20 16:14:38	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_237_ZS	13/4	MAG	Y	-84.993/586.222 21.636/19.911	169.029/ 155.556	Follow-up STP127-7
2	2016-09-20 20:52:00	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_244_ZS	13/4	CON	Y	-90.756/562.295 21.636/20.0	338.057/ 312.5	
3	2016-09-22 14:18:07	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_247_ZS	10/9	DYN	Y	35.162/184.08 52.025/45.156	203.221/ 176.389	Repeat STP127-8
4	2016-09-23 01:23:46	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_250_ZS	10/9	CON	Y	57.618/206.569 52.183/44.978	1630.722/ 1405.556	Repeat in contact mode
5	2016-09-23 01:58:13	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_253_ZS	10/9	DYN	Y	35.162/184.08 52.025/44.978	812.885/ 702.778	Rescan after contact mode
6	2016-09-23 04:53:45	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_256_ZS	1/5	DYN	X	-4.575/0.6 7.42/1.2	33.125/ 37.5	Z calibration
7	2016-09-25 09:12:20	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_260_ZS	13/4	MAG	Y	171.61/45.511 45.762/40.0	357.518/ 312.5	Follow-up STP123-13
8	2016-09-25 13:33:59	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1624607_1627007_267_ZS	13/4	CON	Y	171.61/45.511 45.762/40.0	1430.07/ 1250.0	Repeat in contact mode

STP 129

	Start Time	Archive File	Target/ Tip	Scan Type	Scan Direction	Scan X/Y Origin (microns)/Length X/Y (microns)	X/Y Resolution (nm)	Notes
1	2016-09-26 14:26:47	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1627006_1627309_001_ZS	13/4	MAG	Y	199.661/592.295 101.488/80.0	792.876/ 625.0	
2	2016-09-26 23:52:39	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1627006_1627309_007_ZS	13/4	MAG	Y	-280.464/592.295 101.488/80.0	792.876/ 625.0	
3	2016-09-27 09:18:29	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1627006_1627309_013_ZS	13/4	MAG	Y	-280.464/776.459 101.488/80.0	792.876/ 625.0	
4	2016-09-27 18:43:05	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1627006_1627309_019_ZS	13/4	MAG	Y	200.134/776.459 101.673/80.0	1059.097/ 833.333	
5	2016-09-28 07:43:04	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1627006_1627309_025_ZS	3/8	DYN	Y	-1.72/-8.044 2.001/2.133	3.908/ 4.167	Tip image
6	2016-09-28 18:57:17	RO-C-MIDAS-3-EXT3-SAMPLES-V3.0/ IMG_1627006_1627309_027_ZS	3/8	DYN	Y	-0.744/-9.111 2.001/2.133	3.908/ 4.167	Tip image