Status of the UCSB Gantry

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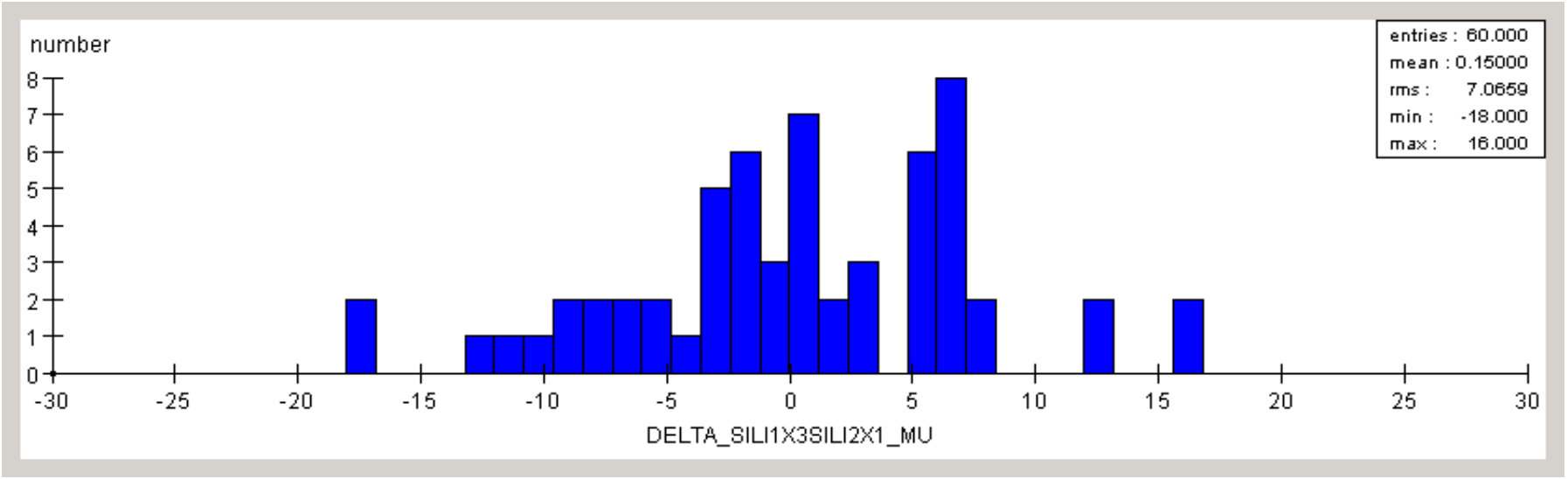
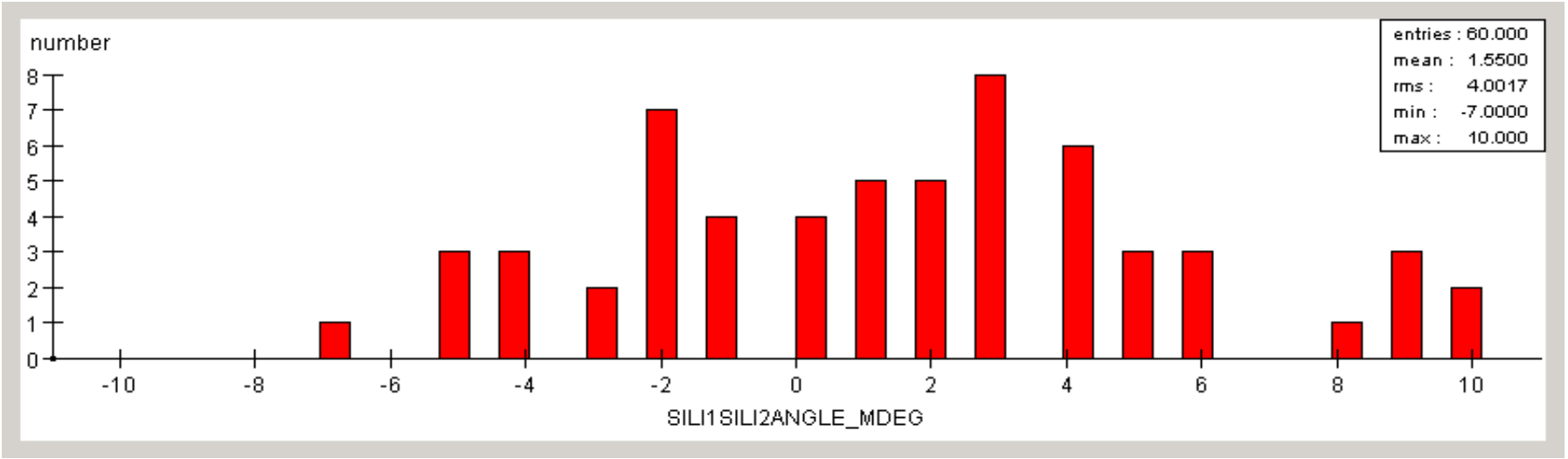
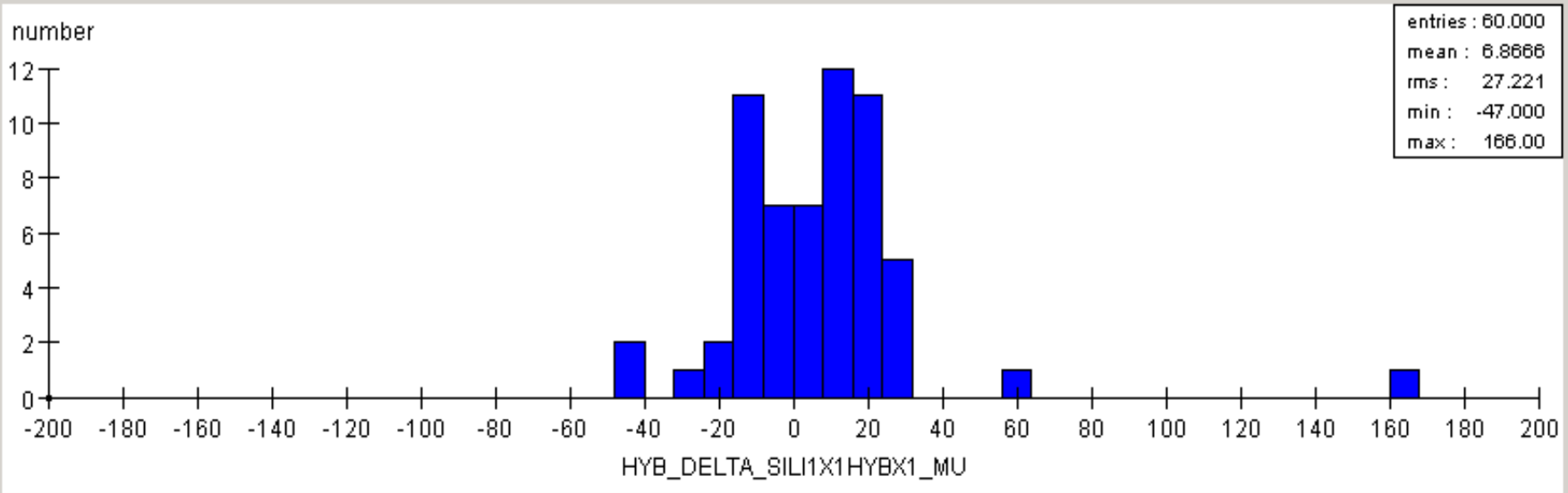
MODULE DATA - SENSORS



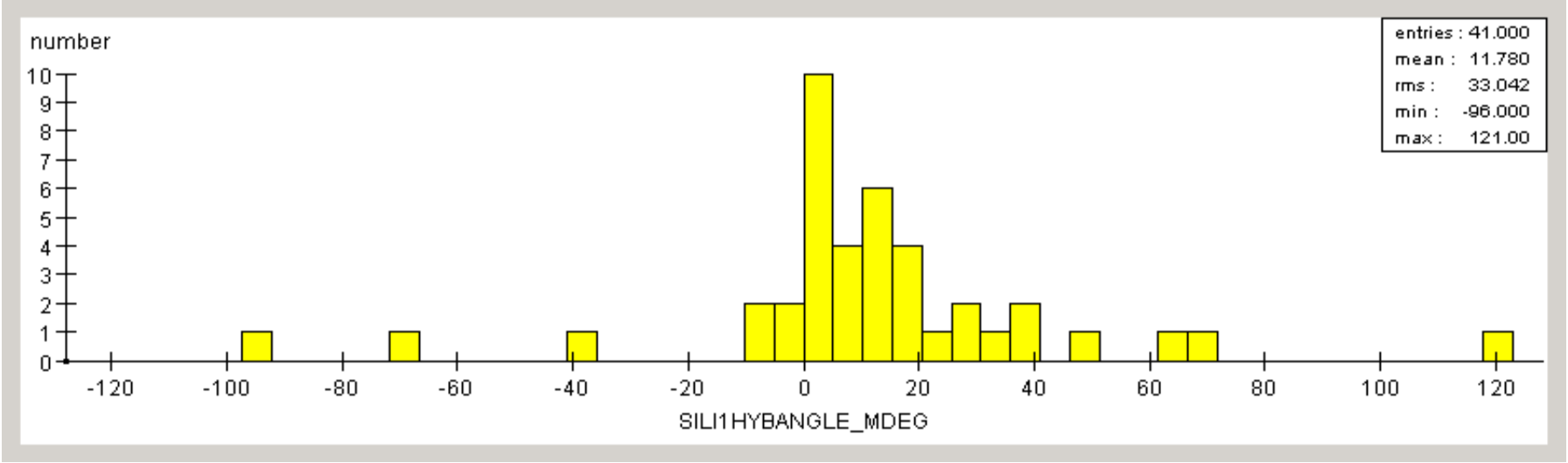


MODULE DATA HYBRIDS (1)

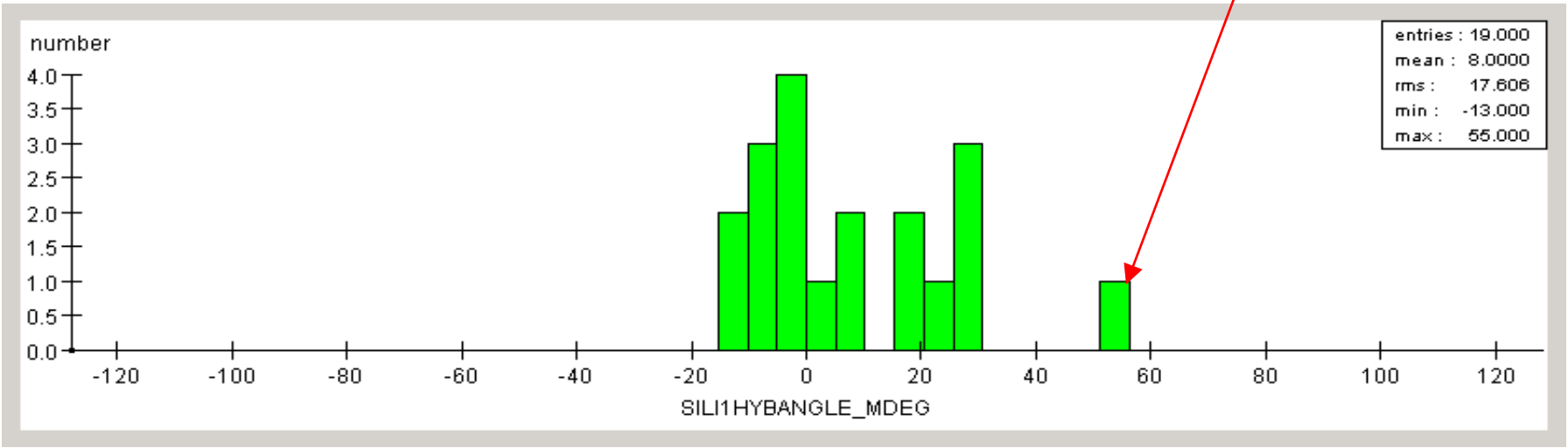


- ***HYBRID TO SENSOR ANGLE WAS NOT CONSISTENT AT FIRST. (MODULES 1 – 41, NEXT SLIDE)***
- ***AFTER INCREASING HYBRID CLAMPING PRESSURE, BY SHIMING THE HYBRID TOOLS, IT SEEMS TO BE MUCH MORE CONSISTENT. (MODULES 42-60, NEXT SLIDE)***

MODULE DATA HYBRIDS (2)

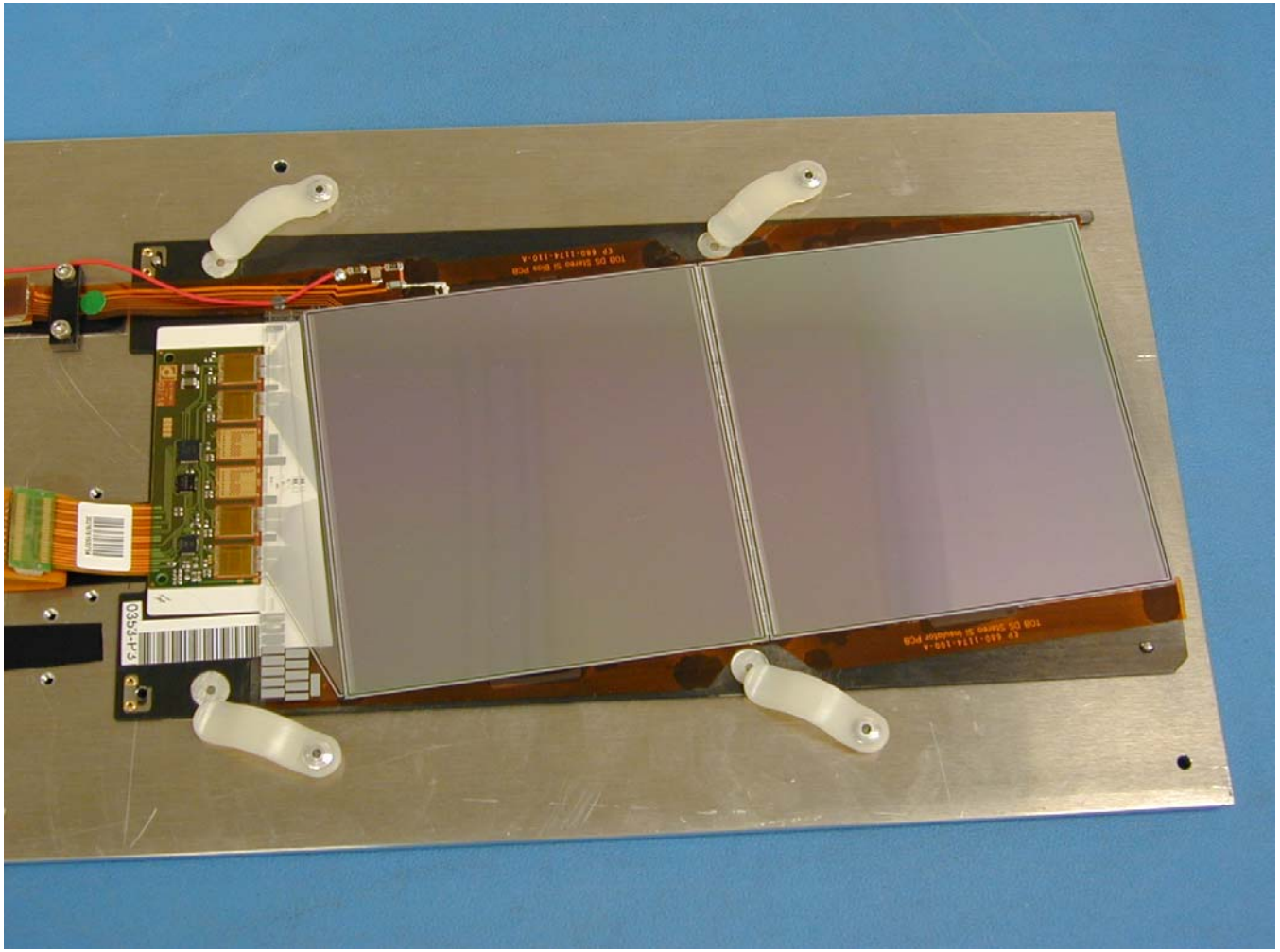


HYBRID CAME DOWN ON EDGE OF HV WIRE



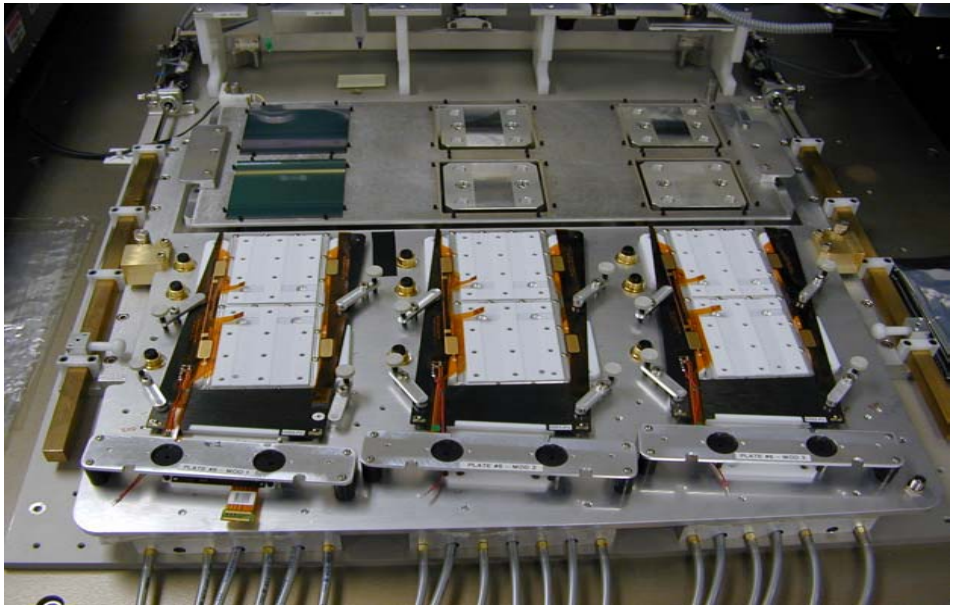
Stereo Module

- **Have built 3 stereo modules (included in previous results).**



Assembly Plates

- *4 fully commissioned R-phi assembly plates*
- *1 prototype R-phi assembly plate (could be used if needed)*
- *1 fully commissioned Stereo assembly plate*

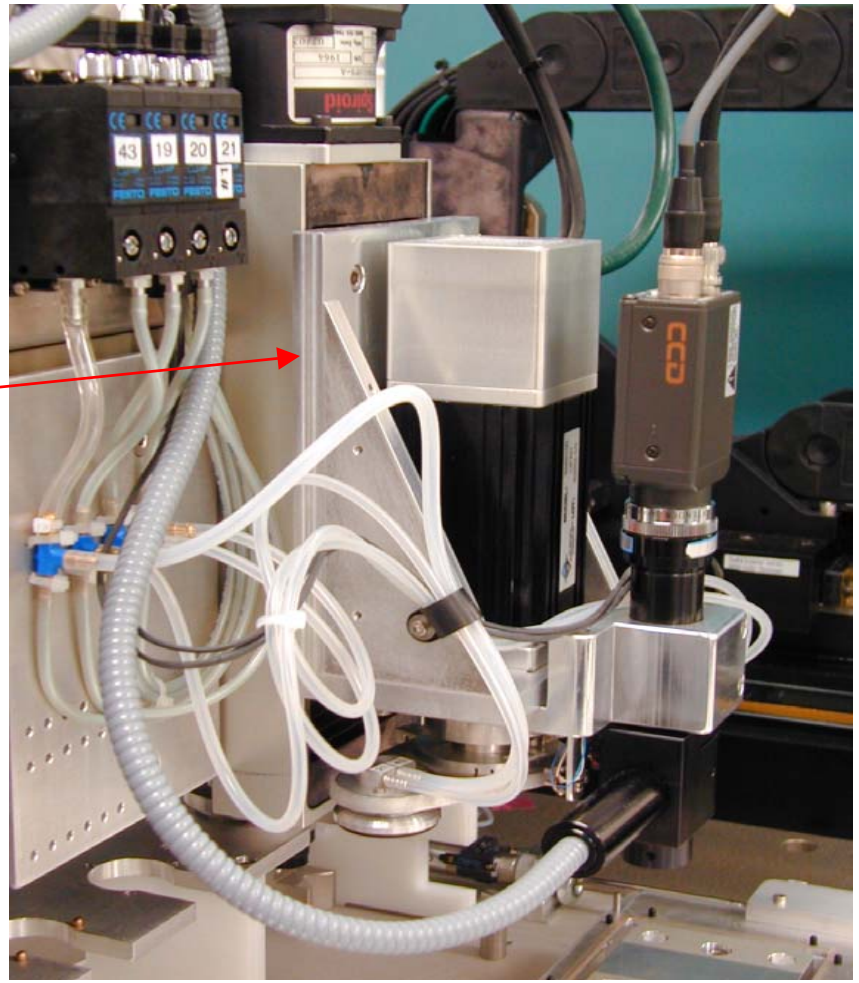


ASSEMBLY TOOLING (1)

BREIF DISCUSSION OF THE DEVELOPMENT OF UCSB MODUDE ASSEMBLY TOOLING:

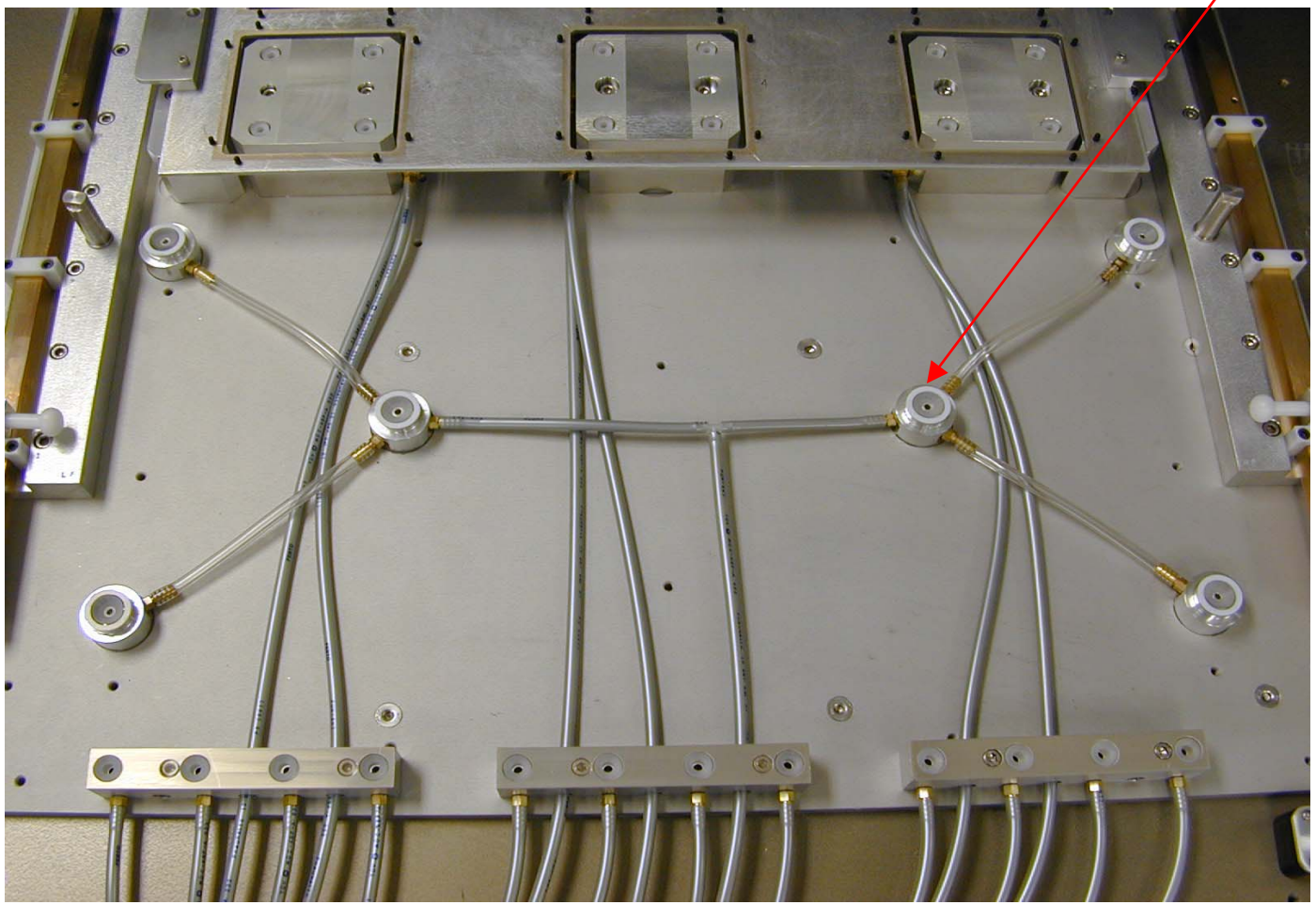
- *Z and U axis made orthogonal to to gantry base plate.*

Aerotech U motor mounting bracket replaced



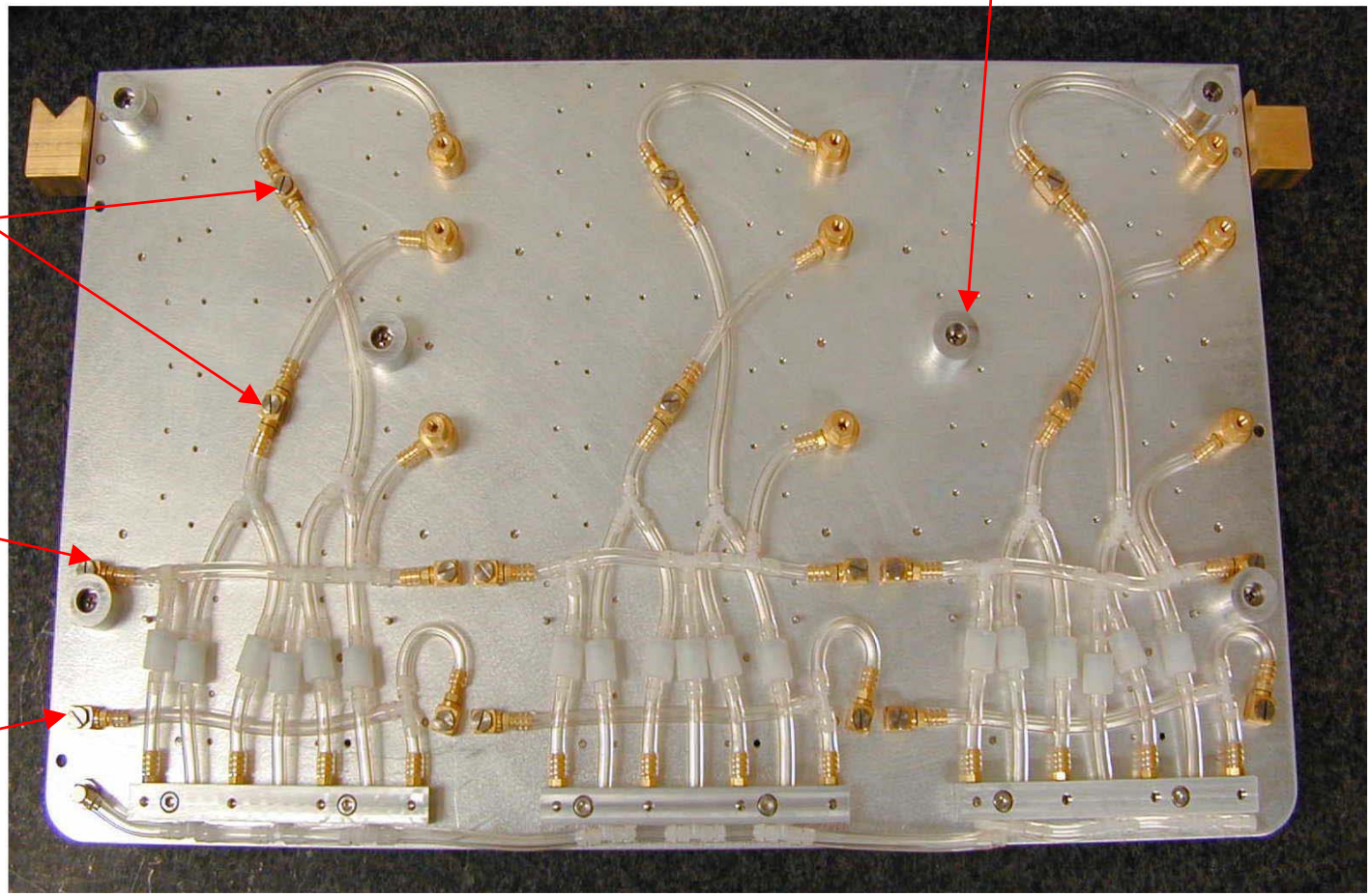
Assembly Tooling (2)

2. SUPPORT PADS FOR THE ASSEMBLY PLATES WERE MACHINED FLAT & PARALLEL BY THE GANTRY



ASSEMBLY TOOLING (3)

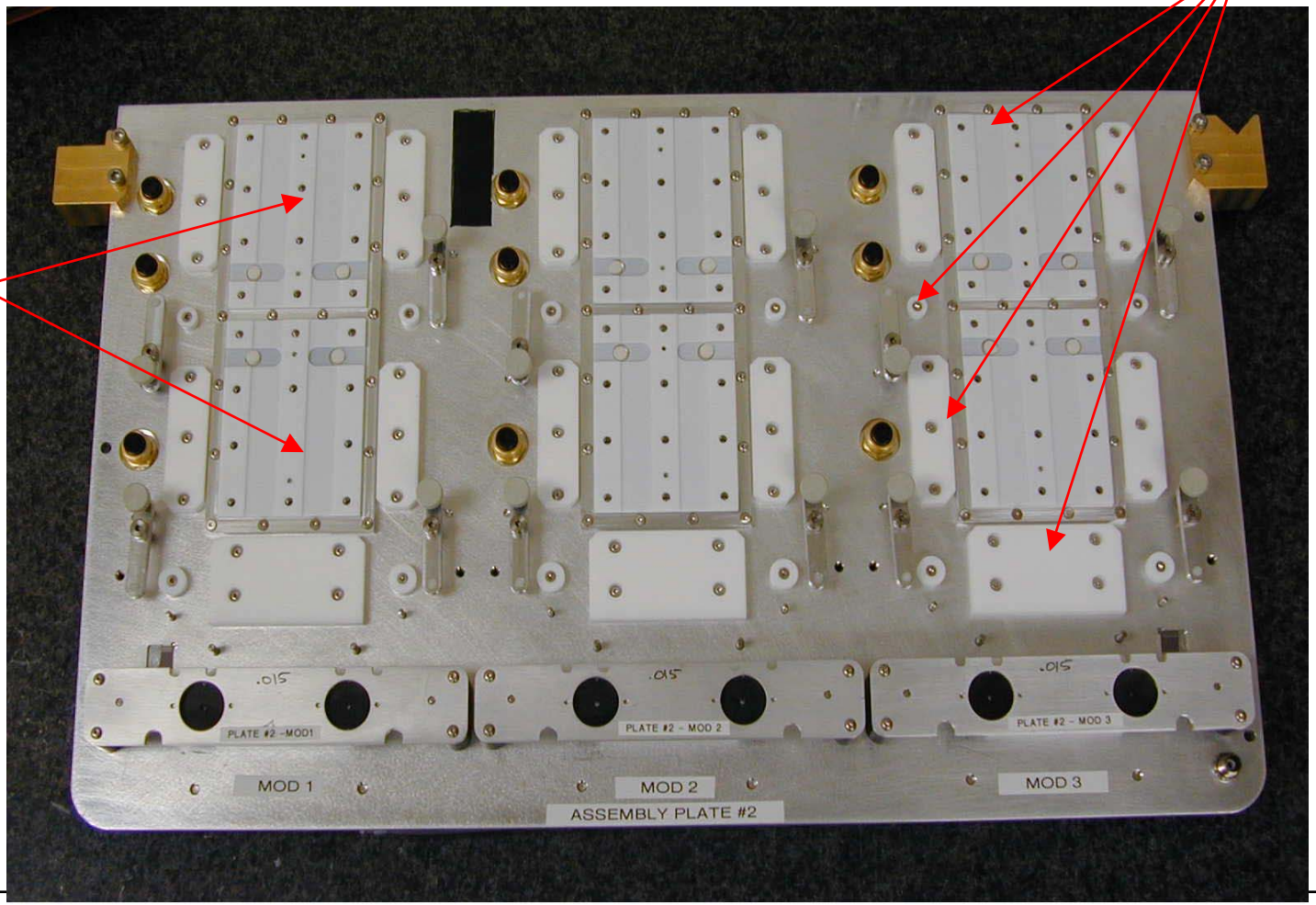
3. ASSEMBLY PLATE FEET MACHINED FLAT & PARALLELTO WITHIN 25um



ASSEMBLY TOOLING (4)

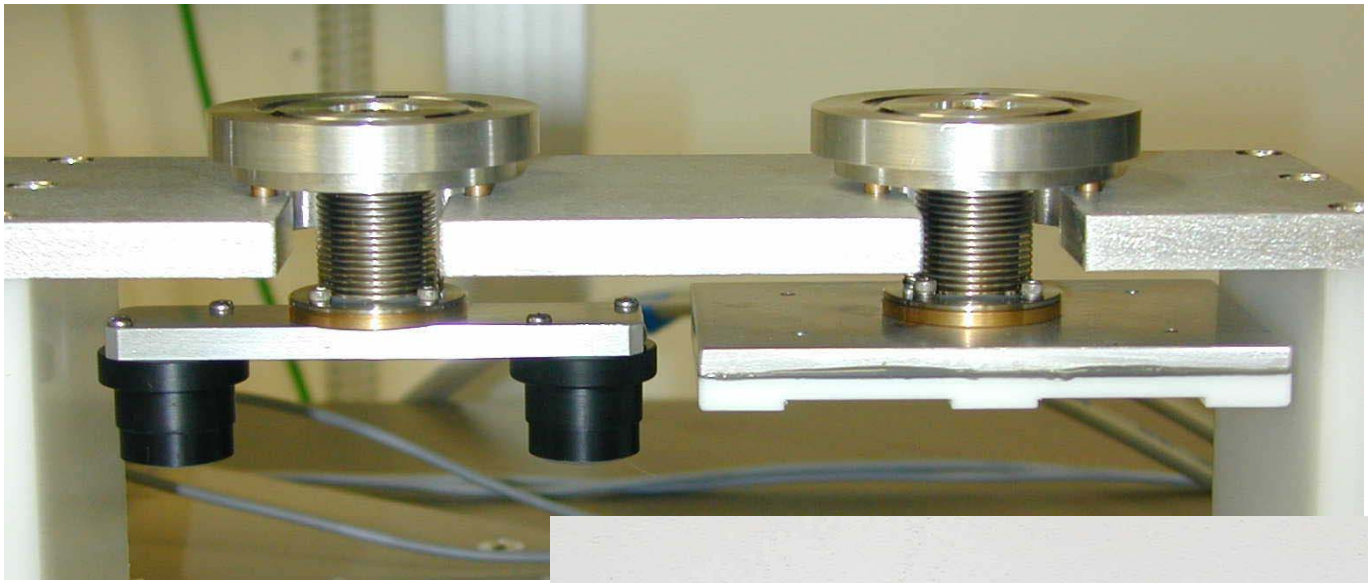
4. ASSEMBLY PLATE TEFLON PADS ARE MACHINED TO FINAL HEIGHTS (+/- 25um) REFERENCED OFF OF FEET ON BOTTOM

Vacuum channels and o-ring grove machined into assembly plate for each sensor

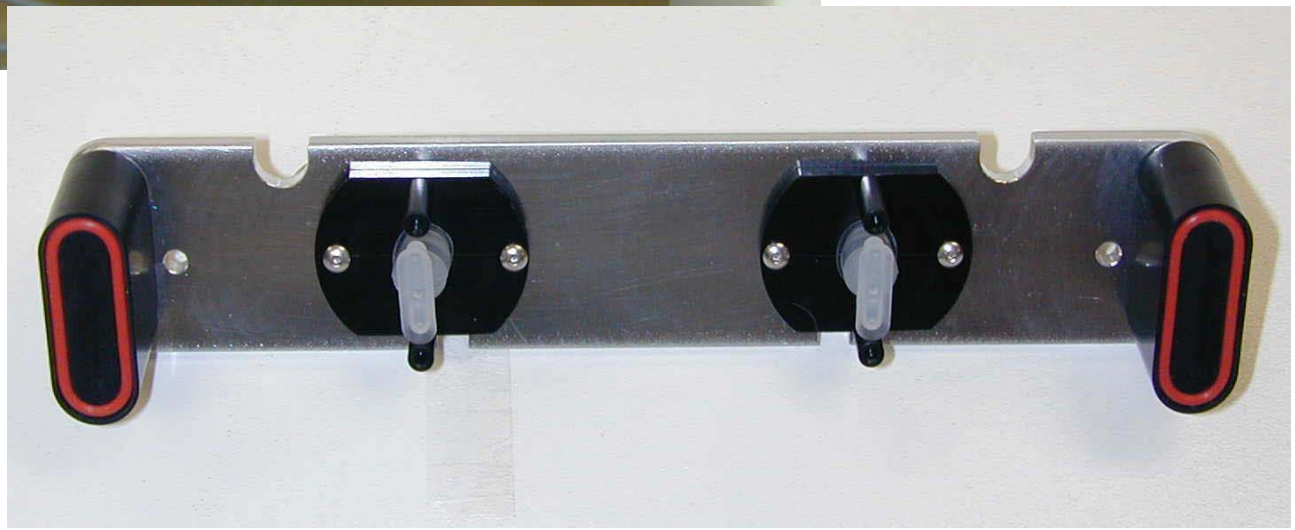


ASSEMBLY TOOLING (5)

5. HYBRID AND SENSOR PICK-UP TOOLS.



6. HYBRID BRIDGE



Gantry/Data Base/OGP

- ***Moving towards using OGP for final module surveys.***
- ***Andrea Allen (recent UCSB physics graduate/technician) has automated the OPG surveying of the modules, so that it is much faster than the gantry.***
  - ***Andrea has written excel macros to compare the survey results with the nominals and output them to files for each position on each assembly plate.***
  - ***The results are also output in a text file that can be incorporated into an xml file and uploaded to the DB.***
- ***This will allow module production on the gantry to start earlier each day. Will make it easier to do 12 modules/day if needed (probably will be).***
- ***The calibration factors used in the gantry are based on OGP surveys of the modules. Using the OPG surveys for the DB should slightly improve our results.***

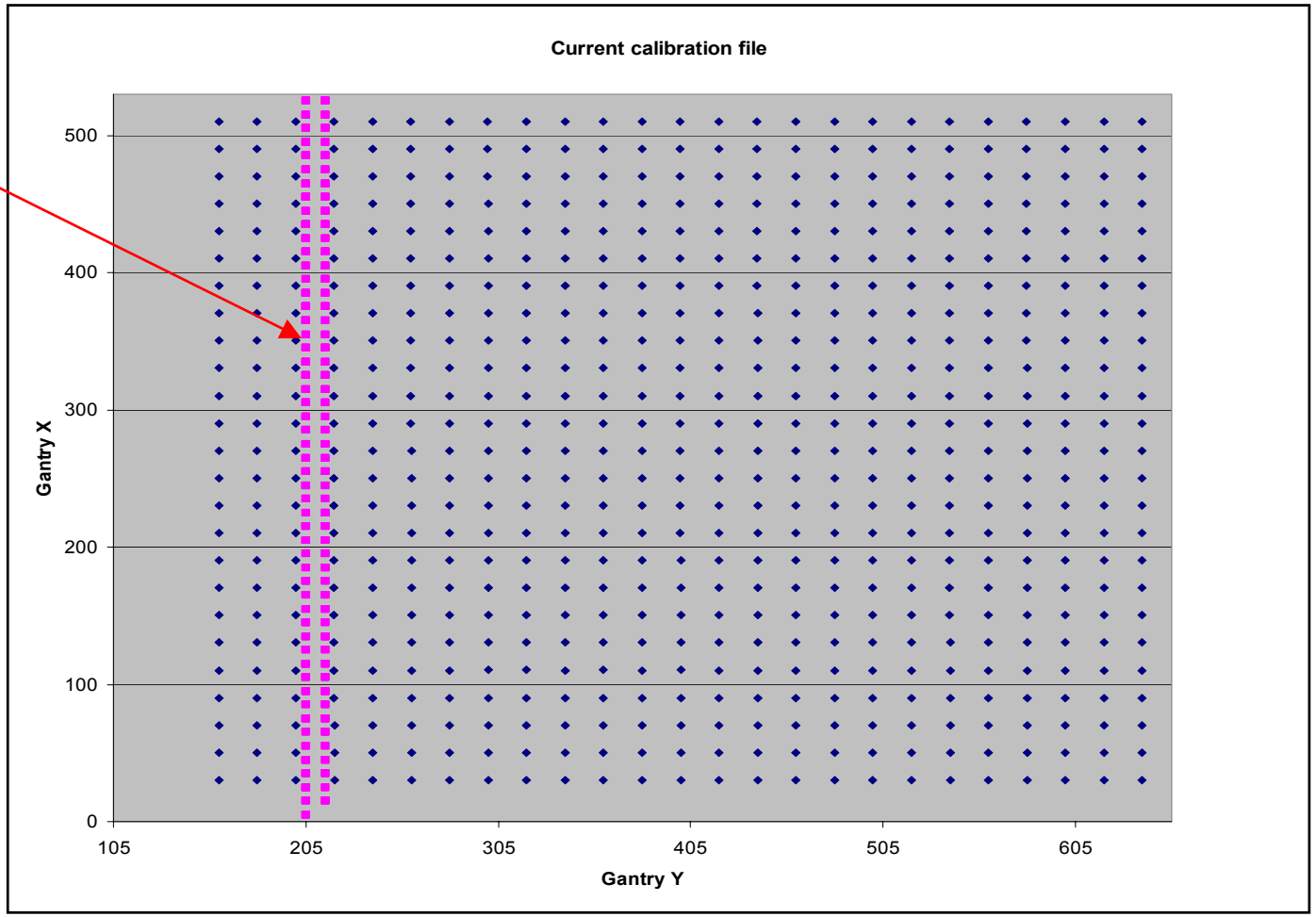
GANTRY 3RD POSITION PROBLEM

- *Did not see problem on R-phi assembly plates, except for occasional skipping of 3rd position thermistor glue points.*
- *Problem was very evident on new stereo assembly plate. 8 of 10 dry runs on the 3rd position could not be completed.*
- *Russell noticed that the problem looked like it was totally position dependent, so he wrote a program to count from 1-50 at points on a grid covering the gantry area we use.*
- *Russell's results showed a strip in the gantry Y axis between the 3rd and 4th rows of the calibration file where there were errors in the counting while sitting at those locations.*

Gantry 3rd Position Problem

Below are the results from this survey using our current calibration file that has calibration points on a 20mm grid.

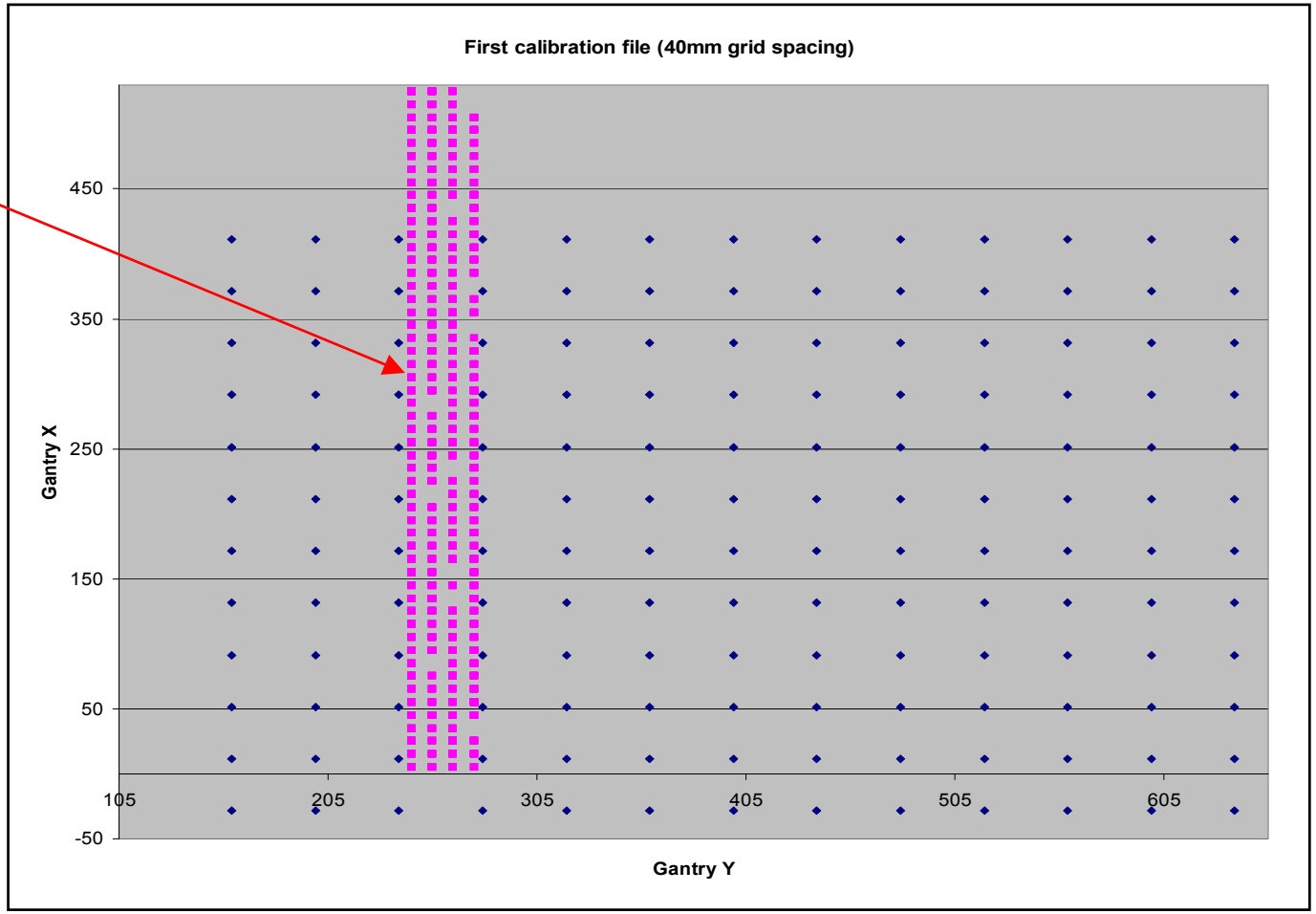
Miscounts occurred



Gantry 3rd Position Problem

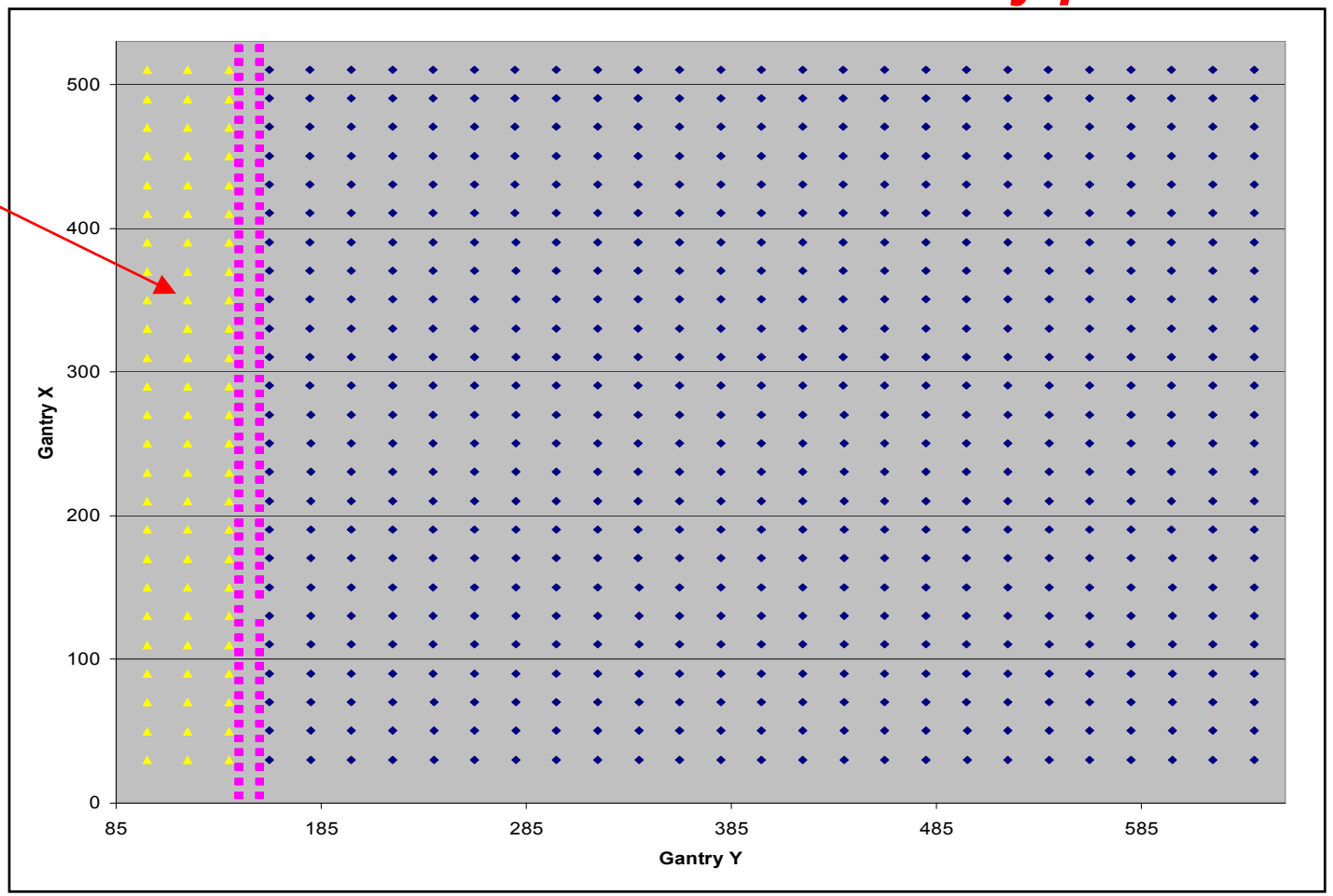
Below are the results from this survey using an old calibration file that has calibration points on a 40mm grid.

Miscounts occurred between same strips



Gantry 3rd Position Problem

- **Solution : Russell added rows of dummy calibration points to move "bad area" off of assembly plate**



U600 Card

- *U600 controller cards & 4EN-PC expansion boards can not be ordered from Aerotech after the end of December 2003 (see Product Phase Out Notification).*
- *Reason – There are chips on the boards that are no longer available.*
- *Spares may or may not be available after December 2003.*
- *UCSB has ordered 1 U600ultra w/32MB controller card. We want to see if it will help some areas where the gantry program is slow on our system. We currently have a U600base w/8MB controller card.*
- *We will keep the U600base card as a US spare.*

A3200 Controller Option

- **There is the option of replacing the U600 and expansion card with Aerotech's current A3200 controller.**
- **Basic process to convert to the A3200 – no guarantees!**
  - Replace DR500 with 4 (one for each axis) A3200 controller/power supplies.
  - Each controller has 12 output ports and 14 input ports (expanded I/O version).
  - Control of gantry is done thru software and the 4 controller/power supplies. No cards put in computer.
  - Current I/O lines would have to be rewired from 4EN-PC expansion card to the four A3200 controller/power supplies.
  - Gantry program <u>should</u> run on A3200 controller without modification.
  - Cost ~ $12,500 USD

Other stuff…

- *Working on detailed instruction document for technicians (Andrea).*
- *Russell has automated the insertion of sensor and hybrid numbers into gantry program from the DB.*
- *Just made tool to check the overall length of the glue dispensing tool before module assembly. Creates an E-stop situation if it is too long.*
- *Plan to do 45 module mini production run in one week (9 modules per day) in early November.*