Kodak

Thermal 3 Head

Chopping Pixels

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Revision History

Revision	Date	Author	Comments
A-A	29 Sep 2006	Kurt Shelton	Initial release
B-A	11 Sep 2007	Maureen Munroe	Updated to reflect loss of automatic beam blockers in head firmware version 1.04.05.

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CHOPPING PIXELS ON A TH3 HEAD

When to chop pixels

You need to chop pixels on a thermal 3 head (TH3) when:

- *Either* polarity have stuck pixels, or
- You have poor or failed results from **beambalance.spt,** or
- A stroke cal has failed due to a stuck pixel, and you have confirmed this by running **bbsprofile.spt,** *and*
- The pixel that needs to be chopped is close to the beginning or the end of the swath (it is not possible to hardware chop pixels in the middle of the swath)

Note: Software chopping can only be done in groups of 8 pixels.

Procedure

1. Inspect the result from **bbsprofile.spt**. Identify the good part of the swath.
2. Check what polarity the head is set to. Type `TH3>set sys polarity`.
3. Switch the head to the other polarity. Type `TH3>set sys polarity 0` or `1`.
4. Rerun bbsprofile.spt. Identify the good part of the swath.
5. Based on the results for bbsprofile for the two polarities, determine the polarity that has the best available imaging swath.

   Note: if the best swath is in the reverse polarity (from the original), then adjust the mechanical yaw on the carriage to match. Use the “procedure”
6. Locate the bad pixel or pixel quad. A bad pixel or pixel quad can be identified by:
   - Using the results of `TH3>bbs profile 1` (it’s easier to see stuck pixels if you view the beam profile on an individual pixel basis)
   - Running **beambalance.spt**
   - Running **bbsprofile.spt**, if `bbs profile` and beambalance.spt fail

Note: When a pixel is stuck on or off, you will notice a large upward or downward spike.

See Appendix A: Script Details for sample graphs: Sample graph with a stuck pixel and with no stuck pixels.

7. Confirm the pixel location to the nearest factor of 8 by typing:

   CAUTION: Follow all laser safety protocols during the next step.

   ```
   TH3>laser on

   TH3>bbs profile 1
   ```

   This produces a matrix of numbers that allows you to determine the blocker home and away location.

8. Estimate the new values for `strokeoffset` and `strokewidth`.

9. Adjust the stroke width and stroke offset values. Note that the new values *must* be divisible by 8.
   Type:

   ```
   TH3> med <media index> strokeoffset <value>

   TH3> med <media index> strokewidth <value>
   ```

10. To maintain throughput, you need to increase drum speed by the same percentage that you reduced the overall swath width. If it isn't possible to increase the drum speed by the same percentage:

    - Increase the drum speed as much as possible, then reduce the power to make up the difference

    Or

    - Reduce the power by the same percentage that you reduced the overall swath width

    Note: *Throughput* is reduced if you only reduce the power.

    The throughput of some systems is limited by other factors (picking, loading or unloading, and so on), so decreasing the swath may not affect the throughput. To accurately calculate the new drum speed and power values, see the Swath Reduction section of the CTP Media Imaging and Performance Database (on the Media Qualification page of the TechPlanet Media site http://techplanet.creo.com/consumables/media/nav/qualification.htm).

11. Run beambalance.spt and bbsprofile.spt to confirm the results. Run a stroke cal (`TH3> stroke cal`) and confirm that it does not fail.

12. Confirm that the setting for mechanical yaw matches the label on top of the head.

13. If required, complete plot optimization to ensure image quality.

APPENDIX A: SCRIPT DETAILS

BeamBalance.spt

This script checks the health of the write laser and light valve by examining the beam balance profiles.

It has the following requirements:

- The beam profile must be sufficiently healthy (with no stuck pixels)
- If the beam balance algorithm fails to flatten the stroke, **Beambalance.spt** will fail and not produce any results

This script creates several graphs (Beam balance maximum, minimum, Beam Balance results, Ratio, and others), but Beam Balance Results provide most of the information in a single graph (1 for each polarity), including:

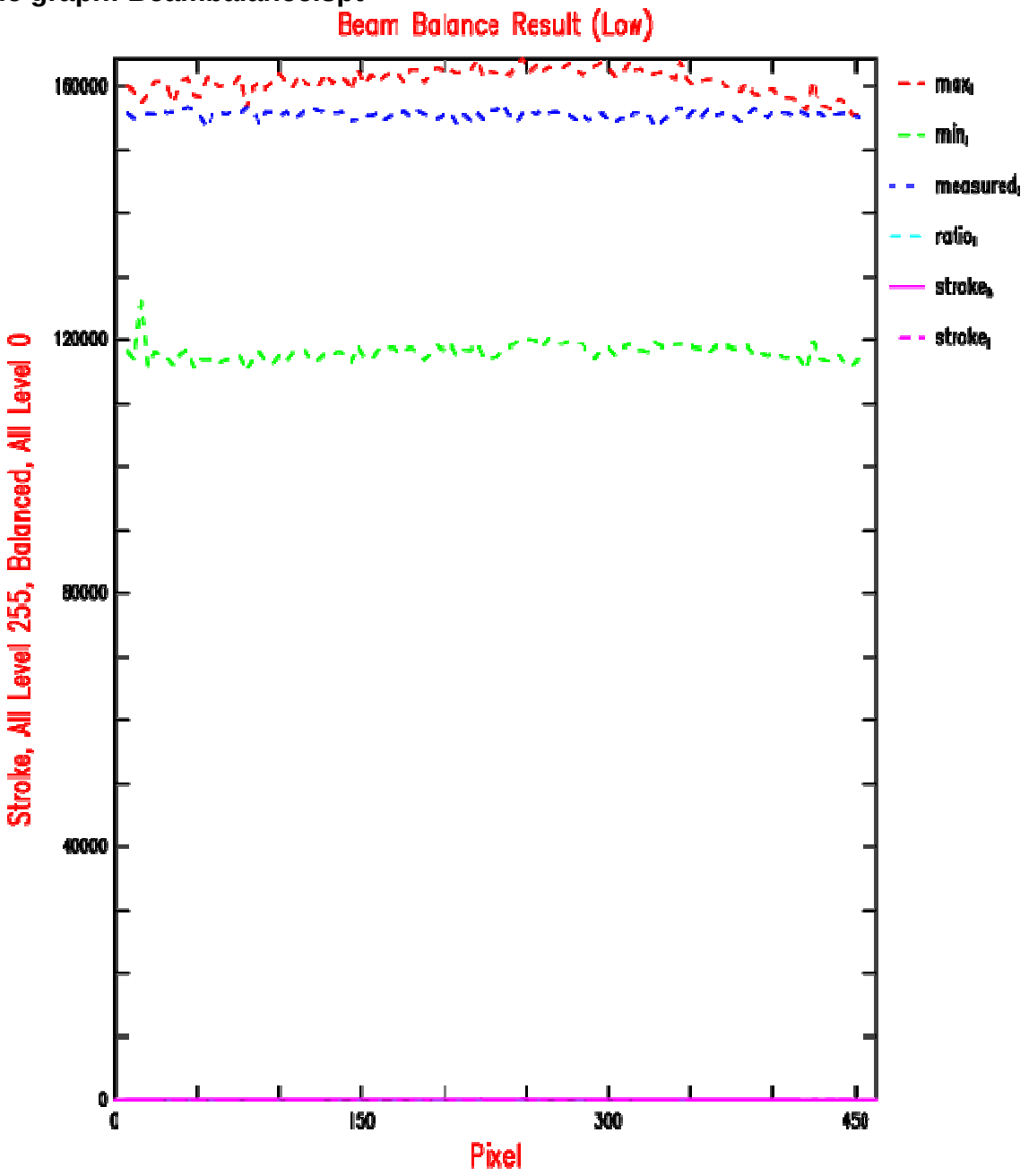
- Stroke values
- Maximum attenuation (All level 255)
- Balanced stroke profile (flat within 2%)
- Unattenuated output (All level 0)

A good result typically has:

- Lots of margin between the fully attenuated (All Level 255) and balanced curves, which means there is room for further adjustments
- There are many places where no attenuation (All Level 0) touches the balanced curve, which indicates that not much attenuation is necessary across the profile
- The stroke curve at the bottom is difficult to read due to the large scale on the Y-axis

See the sample graph.

Sample graph: Beambalance.spt



WL Current A=21.23 A	Max Error=2.00	Stroke Width=448	Stroke Offset=8
WL Current B=21.32 A	MaxCorrectionH=94.0	MaxCorrectionL=108.0	Power On=12.450000
BeamBalanceWindowL=18.962			
\\ccafs5\everest_TM3_Results\EHB0002\BeamBalance\20070502T1118\BeamBalResult.pdf			
BeamBalance ver.1.1	EHB0002	2007:05:02:11:18:19	everest

BBSProfile.spt

BBSProfile.spt can be used instead of **BeamBalance.spt** in the case where the **BeamBalance.spt** fails to produce graphical output since the head was unable to

complete the stroke calibration algorithm. **BBSProfile.sp**t produces similar graphical output that shows the state of the beam profile.

This script creates a graph called **BBSProfileAll.ps** that shows 18 curves:

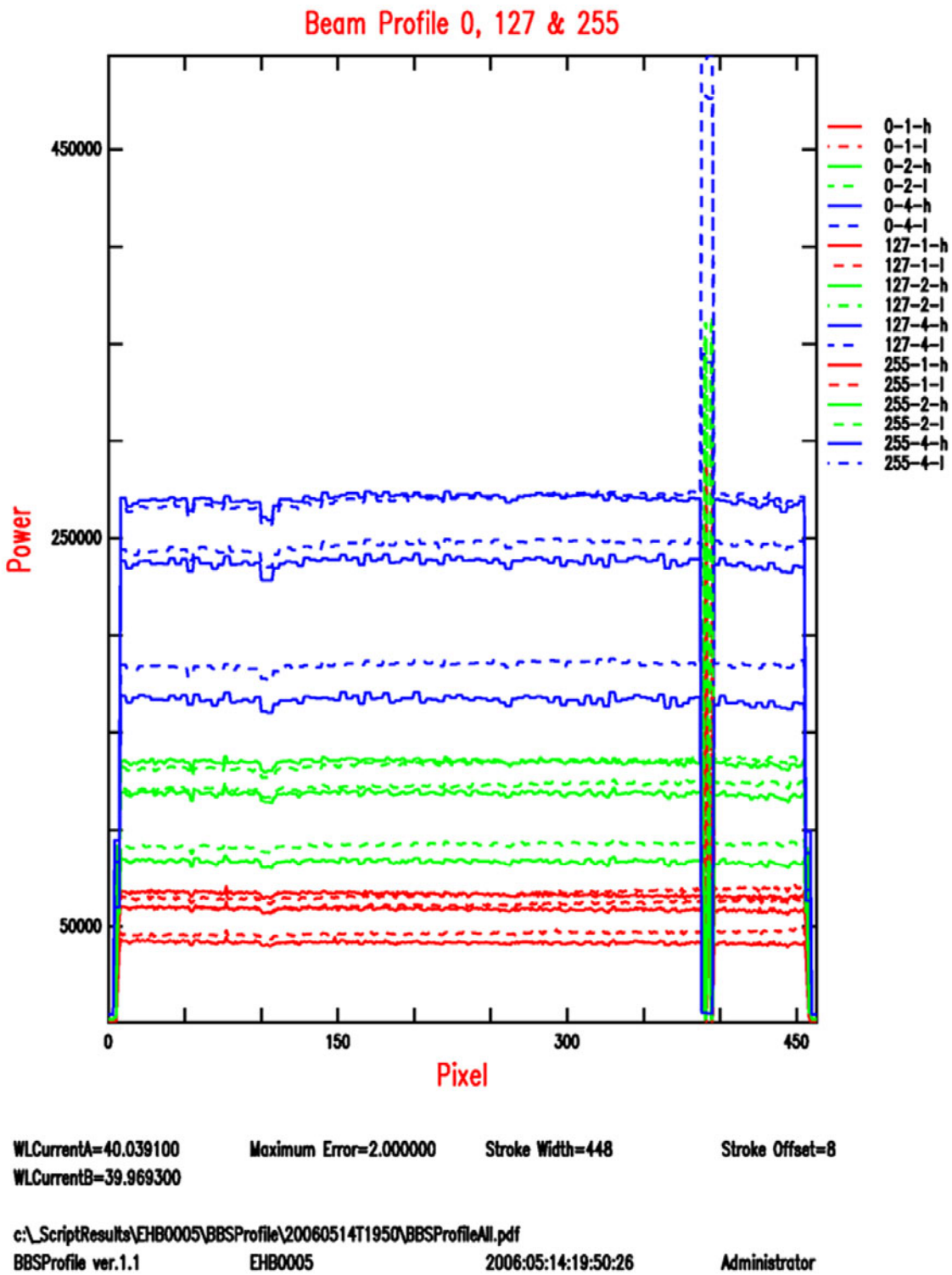
- Write laser profile with zero attenuation (for 1,2, & 4 pixels at each polarity)
- Write laser profile with half (127) attenuation (for 1,2, & 4 pixels at each polarity)
- Write laser profile with full (255) attenuation (for 1,2, & 4 pixels at each polarity)

A successfully balanced beam will have a flat profile on plate. In order to achieve this, the highest point of the full attenuation graph must be higher than the lowest point of the zero attenuation graph. You should have a large buffer between these two points, as this will allow for changes due to aging of the write laser and light valve.

Note: If the slope and curve are non-zero, the final balanced profile will not be a straight horizontal line.

Sample graphs

BBSProfile – Before Chopping Pixels



BBSProfile – After Chopping Pixels

In this case, approximately 64 pixels were blocked on the away side, so the command used was

```
>>act actuate 2 1280
```

