

Update: Thermal Imaging

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ISU WEEKLY STAVE QA MEETING
MARCH 21, 2018



Last Few Weeks

- ▶ Ran warm fluid through pipe
 - ▶ Found fluid loss rate ~ 20 ml/hr
- ▶ Chiller communication issue
- ▶ Pipe Foam First Look!
- ▶ Still working on note...

Chiller Communication Issue

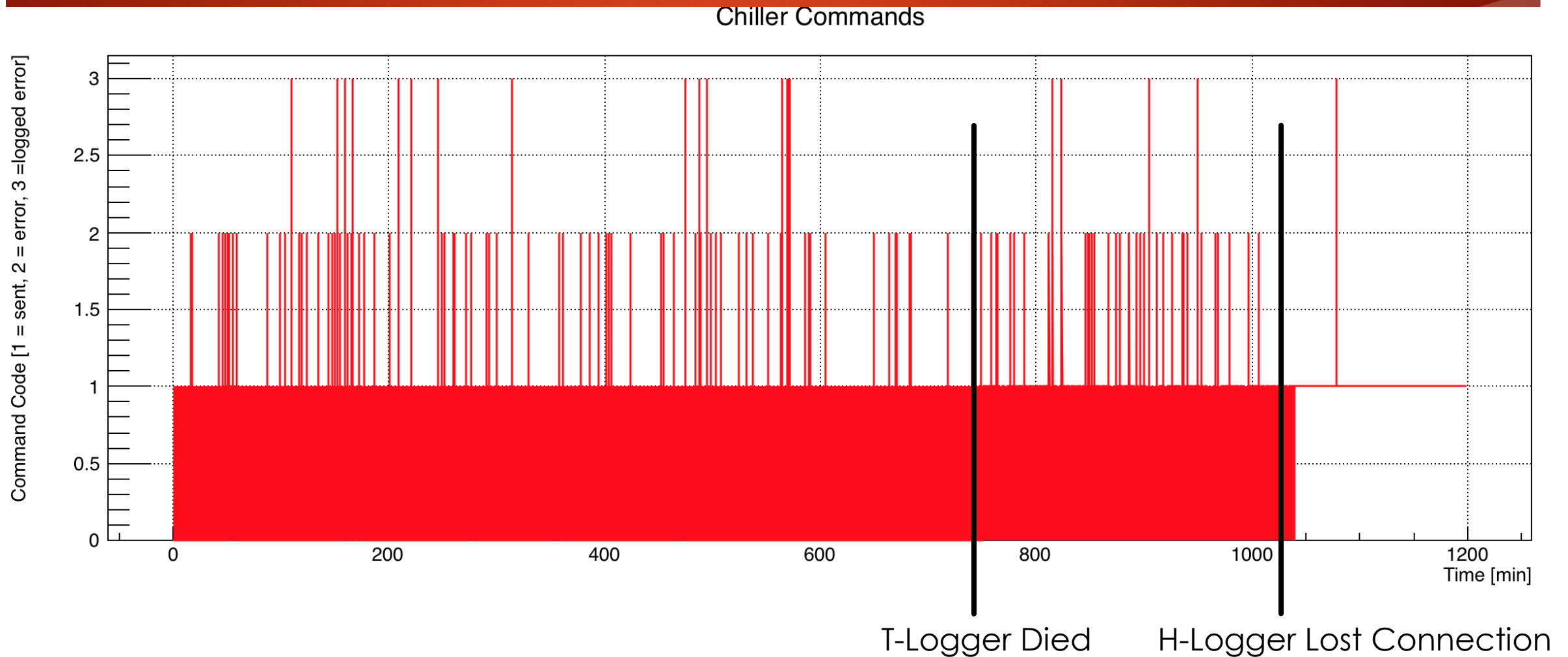
- ▶ Ran hot(+40C) fluid through pipe for 101.7 hrs during break. While sending commands to the chiller every 5 seconds we started noticing send and receive failures in our python code.
- ▶ Remade code so that in the event of a failure, the command is resent up to 3 times. If it fails that many times the entire system is shutdown.

Trial	Com. Time [s]	Run Time [min]	Total Calls	Total Errors	Trial Rate
1	5	232	2334	27	1.16
2	10	396	2392	41	1.71
3a	10	26	149	0	0
3b	10	383	2298	36	1.57
4	5	1444	17674	163	0.92
5	5	1812	22239	105	0.47
6	5	1199	14704	129	0.88
Total	mixed	91.5 hrs	61790	501	0.81

Chiller Communication Issue (cont.)

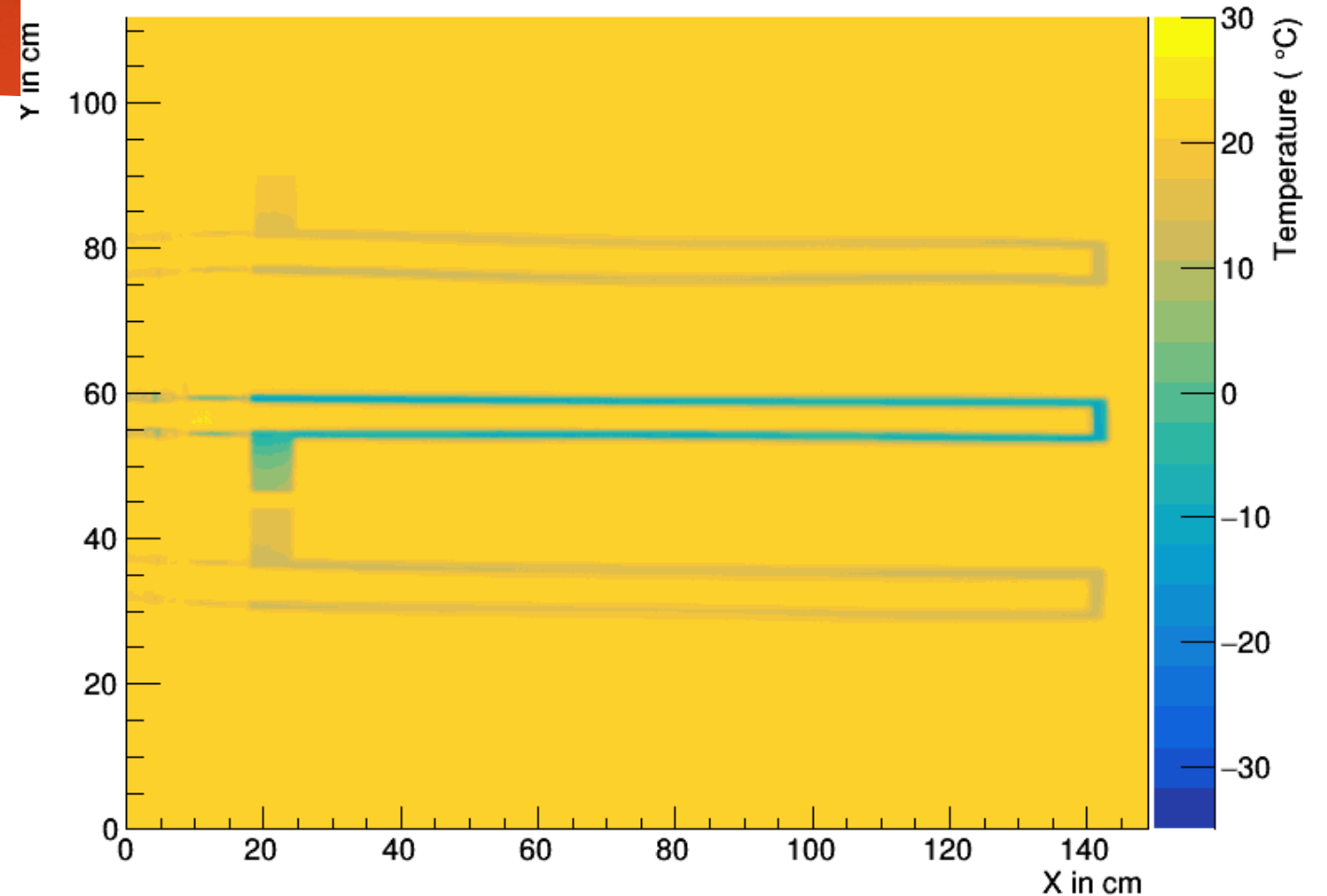
- ▶ Created a way of plotting the errors. On the next slide you will see the best example plot of the errors.
 - ▶ Errors seem to be randomly dispersed
 - ▶ 1-2% of all errors are garbled responses from the chiller
 - ▶ Normal Response: OK<ret>F076=+000000.!
 - ▶ Example Error Response Chunks: O[, _K, oK, OO and N076=+000000.!, G076=+000000.!
 - ▶ The rest of the errors seem to be related to the sending and receiving
- ▶ When all of the other things the computer is talking too, stop talking to it, it gets much fewer errors... Computer Issue???
- ▶ Also noted today that the chiller changes configuration port when restarting the computer...

Chiller Communication Issue (cont.)



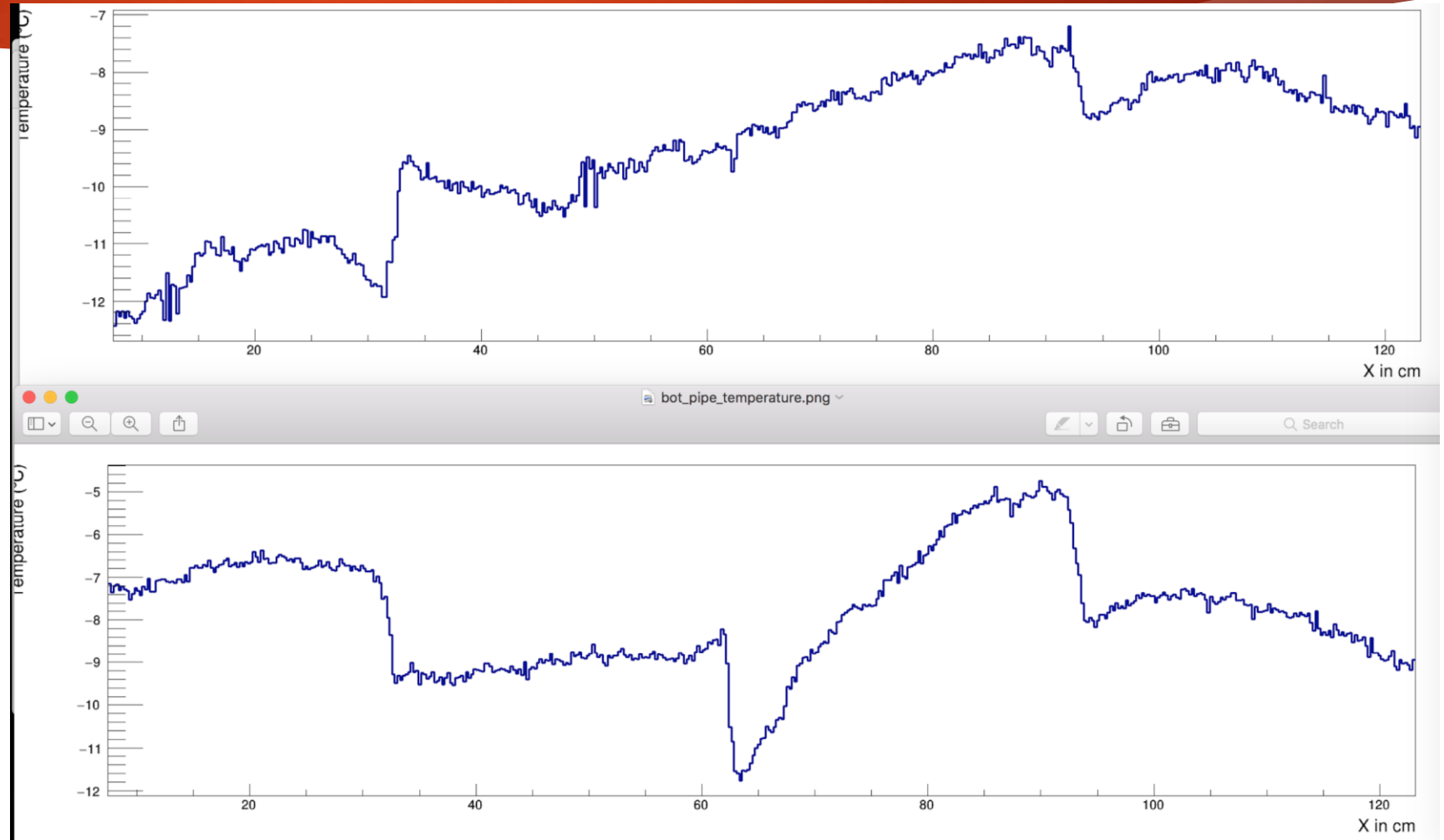
PipeFoam Preliminary Measurements

- ▶ Have taken data of the PipeFoam Stave. Still working on creating a thermal shock video.
 - ▶ Ran into problems with the pipe finding algorithm.
 - ▶ Had to edit it substantially to get it to work on this
 - ▶ Took it from a simple Gaussian fit to an offset Gaussian with different initialization.
- ▶ First thing to notice is it is not flat at all. It has a structure that is related to the foam assembly



PipeFoam Preliminary Measurements (cont.)

- ▶ You will notice that the structures that are seen are significant with temperature jumps of a few C.
- ▶ This may be observable on the stove and may be a part of the background of any temperature spectrum



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